Mathematics Curriculum

Bosley St. Mary's CE Primary School

Contents

Reception

Knowledge	Skills	Vocabulary
Number **Numbers** **Children count reliably with numbers from 1 to 20, place them order and say which number is one more or one less than a given number. Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer. They solve problems, including doubling, halving and sharing.**	• Recognise some numerals of personal significance. • Recognises numerals 1 to 5. • Counts up to three or four objects by saying one number name for each item. • Counts actions or objects which cannot be moved. • Counts objects to 10, and beginning to count beyond 10. • Counts out up to six objects from a larger group. • Selects the correct numeral to represent 1 to 5, then 1 to 10 objects. • Counts an irregular arrangement of up to ten objects. • Estimates how many objects they can see and checks by counting them. • Uses the language of 'more' and 'fewer' to compare two sets of objects. • Finds the total number of items in two groups by counting all of them. • Says the number that is one more than a given number. • Finds one more or one less from a group of up to five objects, then ten objects. • In practical activities and discussion, beginning to use the vocabulary involved in adding and subtracting. • Records, using marks that they can interpret and explain. • Begins to identify own mathematical problems based on own interests and fascinations.	Numerals Numbers One Two Three Four Five Six Seven Eight Nine Ten Count Objects Actions Total One more One less
Shape, space and measures **Children use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and to**	Beginning to use mathematical names for 'solid' 3D shapes and 'flat' 2-D shapes, and mathematical terms to describe shapes.	Solid Flat 2D 3D Shape Behind

Knowledge	Skills	Vocabulary
solve problems. They recognise, create and describe patterns. They explore 12 characteristics of everyday objects and shapes and use mathematical language to describe them.	• Selects a particular named shape. • Can describe their relative position such as '*behind*' or '*next to*'. • Orders two or three items by length or height. • Orders two items by weight or capacity. • Uses familiar objects and common shapes to create and recreate patterns and build models. • Uses everyday language related to time. • Beginning to use everyday language related to money. • Orders and sequences familiar events. • Measures short periods of time in simple ways.	Next to Under On Order Short Not short Tall Not tall Yesterday Today Tomorrow Money sequence

Year 1

Knowledge	Small Steps	Vocabulary
Number **Number and place value** To know how to: 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 **Addition, subtraction** To know how to: 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	Sort objects Count objects Represent objects Count, read and write forwards from any number 0 to 10 Count, read and write backwards from any number 0 to 10 Count one more Count one less One to one correspondence to start to compare groups Compare numbers Introduce <, >, = symbols Compare numbers Order groups of objects Order numbers Ordinal numbers (1st, 2nd, 3rd…) The number line Count forwards and backwards and write numbers to 20 in numerals and words Numbers from 11 to 20 Tens and ones Part-whole model Additional symbol Fact families – addition facts Find number bonds for numbers within 10 Systematic methods for number bonds within 10 Number bonds to 10 Compare number bonds to 10 Addition – adding together Addition – adding more Finding a part Subtraction – taking away, how many left? Crossing out	Sort Count Represent Read Write Zero One Two There Four Five Six Seven Eight Nine Ten Eleven Twelve Thirteen Fourteen Fifteen Sixteen Seventeen Eighteen Nineteen Twenty More Less Compare > is greater than < is less than = is equal to Tens Ones Part Whole Fact families + addition - subtraction = equals Number bonds Together Take away How many left? Crossing out Finding the difference Statements Digit

Knowledge	Small Steps	Vocabulary
solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = – 9	Subtraction – taking away, how many left? Introducing the subtraction symbol Subtraction – finding a part, breaking apart Fact families – the 8 facts Subtraction – counting back Subtraction – finding the difference Comparing addition and subtractions statements a+b>c Comparing addition and subtractions statements a+b>c+d Add by counting on Find and make number bonds Add by making 10 Subtraction – not crossing 10 Subtraction – crossing 10 Related facts Compare number sentences Numbers to 50 Tens and ones Represent numbers to 50 One more one less Compare objects within 50 Compare numbers within 50 Order numbers within in 50 Count in 2s Count in 5s Counting to m100 Partitioning numbers Comparing numbers Ordering numbers One more, one less	Crossing 10 Not crossing 10 Number sentences Partitioning Equal groups Arrays
Multiplication and division To know how to: 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.	Count in 10s Make equal groups Add equal groups Make arrays Make doubles Make equal groups – grouping Make equal groups – sharing	Double Sharing
Fractions To know how to: recognise, find and name a half as one of two equal parts of an object, shape or quantity	Find a half Find a quarter	Fraction Part of Half Quarter

Knowledge	Small Steps	Vocabulary
recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.		
Measurement To know how to: 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]	Compare lengths and heights Measure length	Length Height Measure Centimetres
measure and begin to record the following: lengths and heights mass/weight capacity and volume time (hours, minutes, seconds)	Introduce weight and mass Measure mass Compare mass Introduce capacity and volume Measure capacity Compare capacity	Weight Mass Record Capacity Volume
recognise and know the value of different denominations of coins and notes	Recognising coins Recognising notes Counting in coins	Money Coins Notes 1p 2p 5p 10p 20p 50p £1 £2 £5 £10 £20 £50
sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]	Before and after	
recognise and use language relating to dates, including days of the week, weeks, months and years	Dates	
tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.	Time to the hour Time to the half hour Writing time Comparing time	Before After Next First Today Yesterday Tomorrow

Knowledge	Small Steps	Vocabulary
		Morning Afternoon Evening Monday Tuesday Wednesday Thursday Friday Saturday Sunday January February March April May June July August September October November December O'clock Half past Hand Face
Geometry **Properties of shape** To know how to: 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]. **Position and direction** describe position, direction and movement, including whole, half, quarter and three-quarter turns	Recognise and name 2D shapes Sort 2D shapes Recognise and name 3D shapes Sort 3D shapes Patterns with 3D and 2D shapes Describe turns Describe position	Shape 2D 3D Square Rectangle Triangle Circle Cube Cuboid Pyramid Sphere Pattern Whole turn Half turn Quarter turn Three quarter turn

Year 2

Knowledge	Small steps	Vocabulary
<u>Number</u> **<u>Number and place value</u>** To know how to:	Count in 2s, 5s and 10s.	

Knowledge	Small steps	Vocabulary
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. **<u>Addition, subtraction</u>** To know how to 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: 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.	Count in 3s. Use a place value chart. Represent numbers to 100. Tens and ones with a part whole model. Tens and ones using addition. Compare objects. Compare numbers. Order objects and numbers. Count objects to 100 and read and write numbers in numerals and words. Fact families – addition and subtraction bonds to 20. Check calculations. Compare number sentences. Related facts. Bonds to 100 (tens) Add and subtract 1's. 10 more and 10 less. Add and subtract 10s. Add a 2-digit and 1-digit number – crossing ten. Subtract a 1-digit number from a 2-digit number – crossing ten. Add two 2-digit numbers – not crossing ten – add ones and add tens. Add two 2-digit numbers – crossing ten – add ones and add tens. Subtract a 2-digit number from a 2-digit number – not crossing ten. Subtract a 2-digit number from a 2-digit number – crossing ten – subtract ones and tens. Bonds to 100 (tens and ones) Add three 1-digit numbers.	Place value chart Two-digit numbers *Numbers from 20-100 in words* numerals Check Related facts Crossing 10 Commutative Inverse Solve Number problems

Knowledge	Small steps	Vocabulary
Multiplication and division To know how to: 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. **Fractions** To know how to: recognise, find, name and write fractions , , and of a length, shape, set of objects or quantity 31 41 42 43 write simple fractions for example, of 6 = 3 and recognise the equivalence of and . 21 42 21	2 times-tables. 5 times-tables. 10 times-tables. Multiplication sentences using the x symbol. Recognise equal groups. Make equal groups. Add equal groups. Multiplication sentences from pictures. Use arrays. Make equal parts. Recognise a half. Find a half. Recognise a quarter. Find a quarter. Recognise a third. Find a third. Unit fractions. Non-unit fractions. Equivalence of half and 2 quarters. Find three quarters. Count in fractions.	Times tables Multiplication facts Odd Even x multiplication ÷ division Third Unit fraction Non-unit fraction Equivalence Three quarters Numerator Denominator
Measurement To know how to: * choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g);	Two-step problems. Measure length (cm) Measure length (m)	Meters Kilograms Centigrade Litres Millilitres

Knowledge	Small steps	Vocabulary
temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels compare and order lengths, mass, volume/capacity and record the results using >, < and = recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value find different combinations of coins that equal the same amounts of money solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change compare and sequence intervals of time tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times know the number of minutes in an hour and the number of hours in a day.	Compare lengths. Order lengths. Four operations with lengths. Count money – pence. Count money – pounds (notes and coins) Count money – notes and coins. Select money. Make the same amount. Compare money. Find the total. Find the difference. Find change. O'clock and half past. Quarter past and quarter to. Telling time to 5 mins. Hours and days. Find durations of time. Compare durations of time.	Quarter to Quarter past *5min intervals*
Geometry **Properties of shape** To know how to: *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]	Recognise 2D and 3D shapes. Count sides on 2D shapes. Count vertices on 2D shapes. Draw 2D shapes. Lines of symmetry. Sort 2D shapes. Make patterns with 2D shapes. Count faces on 3D shapes. Count edges on 3D shapes. Count vertices on 3D shapes. Sort 3D shapes. Make patterns with 3D shapes.	Pentagon Hexagon Octagon Cylinder Faces Edges Vertices Sides

Knowledge	Small steps	Vocabulary
compare and sort common 2-D and 3-D shapes and everyday objects. **<u>Position and direction</u>** To know how to: 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).	Making patterns with shapes. Describing movement. Describing turns. Describing movement and turns.	Rotation Right angles Clockwise Anti-clockwise
<u>Statistics</u> To know how to: 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.	Make tally charts. Draw pictograms (1,1) Interpret pictograms (1,1) Draw pictograms (2, 5 and 10) Interpret pictograms (2, 5 and 10) Block diagrams.	Tally chart Pictogram Interpret Block diagram Categories Quantity

Year 3

Knowledge	Small Steps	Vocabulary
Number **Number and place value** To know how to: 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 3-digit number (100s, 10s, 1s) compare and order numbers up to 1,000 identify, represent and estimate numbers using different representations read and write numbers up to 1,000 in numerals and in words solve number problems and practical problems involving these ideas	Count in 50s Find 1, 10, 100 more or less than a given number Hundreds Compare objects to 1,000 Compare numbers to 1,000 Order numbers Number line to 1,000 Represent numbers to 1,000 100s, 10s and 1s	3 digit numbers *numbers 101 – 1000* numerals
Addition, subtraction To know how to: add and subtract numbers mentally, including: a three-digit number and 1s a three-digit number and 10s a three-digit number and 100s add and subtract numbers with up to 3 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 value, and more complex addition and subtraction	Add and subtract multiples of 100 Add and subtract 3-digit and 1-digit numbers – not crossing 10 Add 3-digit and 1-digit numbers – crossing 10 Subtract a 1-digit number from a 3-digit number – crossing 10 Add and subtract 3-digit and 2-digit numbers – not crossing 100 Add 3-digit and 2-digit numbers – crossing 100 Subtract a 2-digit number from a 3-digit number – crossing 100 Add and subtract 100s Spot the pattern – making it explicit Add and subtract a 2-digit and a 3-digit numbers – not crossing 10 or 100 Add 2-digit and 3-digit number – crossing 10 or 100 Subtract a 2-digit number from a 3-digit number – crossing 10 or 100	Multiples Mental methods Written methods Crossing a 10 Exchanging from a 10 Column addition Column subtraction Estimate Inverse operation Number problems

Knowledge	Small Steps	Vocabulary
	Add two 3-digit numbers – not crossing 10 or 100 Add two 3-digit numbers – crossing 10 or 100 Subtract a 3-digit number from a 3-digit number – no exchange Subtract a 3-digit number from a 3-digit number – exchange Estimate answers to calculations Check	
Multiplication and division To know how to: 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	Multiplication – equal groups Multiply by 3 Divide by 3 The 3 times table Multiply by 4 Divide by 4 The 4 times table Multiply by 8 Divide by 8 The 8 times table Comparing statements Related calculations Multiply 2-digits by 1-digit Divide 2-digits by 1-digit Scaling How many ways?	Related calculations Scaling Correspondence problems
Fractions To know how to: count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10 recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators recognise and use fractions as numbers: unit fractions and non-	Unit and non-unit fractions Making the whole Tenths Count in tenths Tenths as decimals Fractions on a number line Fractions of a set of objects Equivalent fractions Compare fractions Order fractions Add fractions Subtract fractions	Tenths Decimals Numerator Denominator Count in fractions Add fractions Subtract fractions

Knowledge	Small Steps	Vocabulary
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 compare and order unit fractions, and fractions with the same denominators solve problems that involve all of the above		
Measurement To know how to: measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) measure the perimeter of simple 2-D shapes add and subtract amounts of money to give change, using both £ and p in practical contexts tell 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	Measure length Equivalent lengths – m & cm Equivalent lengths – mm & cm Compare lengths Add lengths Subtract lengths Measure mass Compare mass Add and subtract mass Measure capacity Compare capacity Add and subtract capacity Measure perimeter Calculate perimeter Pounds and pence Convert pounds and pence Add money Subtract money Give change Months and years Hours in a day Telling the time to 5 minutes Telling the time to the minute Using a.m. and p.m. 24-hour clock Finding the duration Comparing durations Start and end times Measuring time in seconds	Millimetres Perimeter Convert Analogue clock Roman numerals (1-12) AM PM 24hour clock minutes duration start time end time seconds noon midnight

Knowledge	Small Steps	Vocabulary
vocabulary such as o'clock, am/pm, 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 calculate the time taken by particular events or tasks]		
Geometry **Properties of shape** To know how to: draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them recognise angles as a property of shape or a description of a turn identify right angles, recognise that 2 right angles make a half-turn, 3 make three-quarters of a turn and 4 a complete turn; identify whether angles are greater than or less than a right angle identify horizontal and vertical lines and pairs of perpendicular and parallel lines	Recognise and describe 2D shapes Recognise and describe 3-D shapes Make 3-D shapes Turns and angles Right angles in shapes Compare angles Draw accurately Horizontal and vertical Parallel and perpendicular	Other 2D/ 3D shapes not mentioned in previous year groups Angles Complete turn Horizontal Vertical Pairs of lines Parallel Perpendicular
Statistics To know how to: 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	Pictograms Bar charts Tables	Scaled Bar chart Scaled pictograms Table Solve two step problems

Year 4

Knowledge	Small Steps	Vocabulary
Number - Place Value To know how to: Count in multiples of 6, 7, 9, 25 and 1,000 Find 1,000 more or less than a given number Count backwards through 0 to include negative numbers Recognise the place value of each digit in a four-digit number (1,000s, 100s, 10s, and 1s) Order and compare numbers beyond 1,000 Identify, represent and estimate numbers using different representations Round any number to the nearest 10, 100 or 1,000 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 0 and place value	Count in 25s to 100 Count in 1,000s 1,000 more or less Negative numbers 1,00s2,100s, 10s and 1s Partitioning Compare numbers Order numbers Number line to 10,000 Round to the nearest 10 Round to the nearest 100 Round to the nearest 1,000 Roman numerals	Multiples of 6 Multiples of 7 Multiples of 9 Multiples of 25 Multiples of 1000 Negative number Count through zero Four digit numbers Round to the nearest Roman numerals 13-100
Number – Addition / Subtraction To know how to: 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,	Add and subtract 1s, 10s, 100s and 1000s Add two 4-digit numbers – no exchange Add two 4-digit numbers – one exchange Add two 4-digit numbers – more than one exchange Subtract two 4-digit numbers – no exchange Subtract two 4-digit numbers – one exchange Subtract two 4-digit numbers – more than one exchange	4 digit numbers Efficient methods Strategies Problems in context

Knowledge	Small Steps	Vocabulary
deciding which operations and methods to use and why	Efficient subtraction Estimate answers Checking strategies	
Number - Multiplication Division To know how to: 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 3 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 1 digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects	Multiply by 10 Multiply by 100 Divide by 10 Divide by 100 Multiply by 1 and 0 Divide by 1 Multiply and divide by 6 6 times table and division facts Multiply and divide by 9 9 times table and division facts Multiply and divide by 7 7 times table and division facts 11 and 12 times table Multiply 3 numbers Factor pairs Efficient multiplication Written methods Multiply 2-digits by 1-digit Multiply 3-digits by 1-digit Divide 2-digits by 1 digit Divide 3-digits by 1 digit Correspondence problems	Division facts Multiplication facts Factor pairs
Number - Fractions (including decimals) To know how to: Recognise and show, using diagrams, families of common equivalent fractions Count up and down in hundredths; recognise that hundredths arise when dividing an object by 100 and dividing tenths by 10	What is a fraction? Equivalent fractions Fractions greater than 1 Count in fractions Add 2 or more fractions Subtract 2 fractions Subtract from whole amounts Calculate fractions of a quantity Problem solving – calculate quantities Recognise tenths and hundredths Tenths as decimals Tenths on a place value grid Tenths on a number line Divide 1-digit by 10 Divide 2-digits by 10 Hundredths Hundredths as decimals Hundredths on a place value grid	Families of equivalent fractions Equivalent decimals Round to 1 decimal place Decimal up to 2 dp

Knowledge	Small Steps	Vocabulary
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 hundreds Recognise and write decimal equivalents to 1/4 , 1/2 , 3/4 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 1 decimal place to the nearest whole number Compare numbers with the same number of decimal places up to 2 decimal places Solve simple measure and money problems involving fractions and decimals to 2 decimal places	Divide 1 or 2-digits by 100 Make a whole Write decimals Compare decimals Order decimals Round decimals Halves and quarters	
Measurement To know how to: Convert between different units of measure [for example, kilometre to metre; hour to minute] Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres Find the area of rectilinear shapes by counting squares	Kilometres Perimeter on a grid Perimeter of a rectangle Perimeter of rectilinear shapes What is area? Counting squares Making shapes Comparing area Pounds and pence Ordering money Estimating money Four operations Hours, minutes and seconds Years, months, weeks and days	Convert Perimeter on a grid, rectangle, rectilinear shape Area Digital clock

Knowledge	Small Steps	Vocabulary
Estimate, compare and calculate different measures, including money in pounds and pence 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	Analogue to digital – 12 hour Analogue to digital – 24 hour	
Geometry **Properties of Shape** To know how to: Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes Identify acute and obtuse angles and compare and order angles up to 2 right angles by size 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	Triangles Quadrilaterals Identify angles Compare and order angles Lines of symmetry Complete a symmetric figure	Geometric shape Right angle triangle Equilateral triangle Isosceles triangle Scalene triangle Quadrilateral Acute angle Obtuse angle Symmetry Lines of symmetry Symmetrical
Geometry **Position and Direction** To know how to: 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	Describe position Draw on a grid Move on a grid Describe a movement on a grid	Co-ordinates First quadrant Translation Left/right Up/down Plot points Polygon
Statistics To know how to: Interpret and present discrete and continuous data using	Interpret charts Comparison, sum and difference	Discrete data Continuous data Time graph

Knowledge	Small Steps	Vocabulary
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	Introducing line graphs Line graphs	Comparison Line graph

Year 5

Knowledge	Small Steps	Vocabulary
Number **Number and place value** To know how to: 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.	Numbers to 10,000 Roman numerals to 1,000 Round to the nearest 10, 100 and 1,000 Number to 100,000 Compare and order numbers to 100,000 Round numbers within 100,000 Numbers to a million Counting in 10s, 100s, 1,000s, 10,000s and 100,000s Compare and order numbers to a million Round numbers to a million Negative numbers	Hundred thousand Million
Addition, subtraction To know how to: 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,	Add whole numbers with more than 4digits (column method) Subtract whole numbers with more than 4digits (column method) Round to estimate and approximate Inverse operations (addition and subtraction) Multi-step addition and subtraction problems	4 digit numbers

Knowledge	Small Steps	Vocabulary
deciding which operations and methods to use and why. **Multiplication and division** To know how to: identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers 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 recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3) solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes solve problems involving addition, subtraction, multiplication and division and a	Multiples Factors Common factors Prime numbers Square numbers Cube numbers Multiply by 10, 100 and 1,000 Divide by 10, 100 and 1,000 Multiples of 10, 100 and 1,000 Multiply 4-digits by 1-digit Multiply 2-digits (area model) Multiply 2-digits by 2-digits Multiply 3-digits by 2-digits Multiply 4-digits by 2-digits Divide 4-digits by 1-digit Divide with remainders	Common factors Factor pairs Prime numbers Square numbers Cube numbers Prime factors Composite numbers Long multiplication Short division Remainders Interpret remainders

Knowledge	Small Steps	Vocabulary
combination of these, including understanding the meaning of the equals sign solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates. **Fractions** To know how: compare and order fractions whose 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, 52 + 54 = 56 = 151] 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] 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	Equivalent fractions Improper fractions to mixed numbers Mixed numbers to improper fractions Number sequences Compare and order fractions less than 1 Compare and order fractions greater than 1 Add and subtract fractions Add fractions within 1 Add 3 or more fractions Add fractions Add mixed numbers Subtract fractions Subtract mixed numbers Subtract – breaking the whole Subtract 2 mixed numbers Multiply unit fractions by an integer Multiply non-unit fractions by an integer Multiply mixed numbers by integers Fraction of an amount Using fractions as operators Decimals up to 2 d.p. Decimals as fractions Understand thousandths Thousandths as decimals Rounding decimals Order and compare decimals Understand percentages Percentages as fractions and decimals Equivalent F.D.P. Adding decimals within 1 Subtracting decimals within 1 Complements to 1 Adding decimals – crossing the whole Adding decimals with the same number of decimal places	Improper fractions Mixed numbers Fraction number sequences Decimals as fractions Hundredths Percent

Knowledge	Small Steps	Vocabulary
read, write, order and compare numbers with up to three decimal places solve problems involving number up to three decimal places recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal solve problems which require knowing percentage and decimal equivalents of 21, 41, 51, 52, 54 and those fractions with a denominator of a multiple of 10 or 25.	Subtracting decimals with the same number of decimal places Adding decimals with a different number of decimal places Subtracting decimals with a different number of decimal places Adding and subtracting wholes and decimals Decimal sequences Multiplying decimals by 10, 100 and 1,000 Dividing decimals by 10, 100 and 1,000	
Measurement To know how to: convert between different units of metric measure understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes estimate volume [for example, using 1 cm3 blocks to build cuboids (including cubes)] and capacity [for example, using water] solve problems involving converting between units of time	Measure perimeter Calculate perimeter Area of rectangles Area of compound shapes Area of irregular shapes Kilograms and kilometres Milligrams and millilitres Metric units Imperial units Converting units of time Timetables What is volume Compare volume Estimate volume Estimate capacity	Area of irregular shapes Perimeter of composite rectilinear shapes shapes Metric units Imperial units Timetables Volume

Knowledge	Small Steps	Vocabulary
use all four operations to solve problems involving measure using decimal notation, including scaling.		
Geometry **Properties of shape** To know how to: identify 3-D shapes, including cubes and other cuboids, from 2-D representations know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles draw given angles, and measure them in degrees (o) identify: angles at a point and one whole turn (total 360o) angles at a point on a straight line and 21 a turn (total 180o) other multiples of 90o 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. **Position and direction** To know how to: 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.	Measuring angles in degrees Measuring with a protractor Drawing lines and angles accurately Calculating angles on a straight line Calculating angles around a point Calculating lengths and angles in shapes Regular and irregular polygons Reasoning about 3-D shapes Position in the first quadrant Reflection Reflection with coordinates Translation Translation with coordinates	Degrees Angle measurer/protractor Reflex angles Angles on a whole turn Straight line Reflection with coordinates Translation with coordinates
Statistics To know how to: solve comparison, sum and difference problems using information presented in a line graph	Read and interpret line graphs Draw line graphs Use line graphs to solve problems Read and interpret tables Two-way tables Timetables	Two-way tables Timetables

Knowledge	Small Steps	Vocabulary
complete, read and interpret information in tables, including timetables.		

Year 6

Knowledge	Small Steps	Vocabulary
Number **Number and place value** To know how to: 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, subtraction, multiplication and division** **Pupils should be taught to:** To know how to: 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,	Numbers to ten million Compare and order any number Round any number Negative numbers Add and subtract whole numbers Multiply up to a 4-digit number by 1-digit Short division Division using factors Long division (1) Common factors Common multiples Prime Square and cubes Order of operations Mental calculations and estimation Reason from know facts	Ten million

Knowledge	Small Steps	Vocabulary
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 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 Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. **Fractions** To know how to: 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, 41 × 21 = 81] Divide proper fractions by whole numbers [for example, 31 ÷ 2 = 61]	Simplify fractions Fractions on a number line Compare and order (denominator) Compare and order (numerator) Add and subtract fractions Add fractions Subtract fractions Mixed addition and subtraction Multiply fractions by integers Multiply fractions by fractions Divide fractions by integers Four rules with fraction s Fraction of an amount Fraction of amount – find the whole Three decimal places Multiply by 10, 100 and 1,000 Divide by 10, 100 and 1,000 Multiply decimals by integers Divide decimals by integers Division to solve problems Decimals as fractions Fractions to decimals Fractions to percentages Equivalent FDP	Multiply fractions Divide proper fractions by whole numbers

Knowledge	Small Steps	Vocabulary
Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, 83] Identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places multiply one-digit numbers with up to two decimal places by whole numbers Use written division methods in cases where the answer has up to two decimal places Solve problems which require answers to be rounded to specified degrees of accuracy Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.	Order FDP Percentage of an amount Percentages – missing values	
Ratio and Proportion To know how to: 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.	Using ratio language Ratio and fractions Introducing the ratio symbol Calculating ratio Using scale factors Calculating scale factors Ratio and proportion problems	Ratio Proportion Unequal sharing

Knowledge	Small Steps	Vocabulary
Algebra To know how to: 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.	 Find a rule – one step Find a rule – two step Forming expressions Substitution Formulae Forming equations Solve simple one-step equations Solve two-step equations Find pairs of values Enumerate possibilities	Algebra Formulae Linea number sequences Expressions Forming equations Pairs of values Enumerate possibilities
Measurement To know how to: Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places Convert between miles and kilometres Recognise that shapes with the same areas can have different perimeters and vice versa Recognise when it is possible to use formulae for area and volume of shapes Calculate the area of parallelograms and triangles	 Metric measures Convert metric measures Calculate with metric measures Miles and kilometres Imperial measures Shapes – same area Area and perimeter Area of a triangle Area of parallelogram Volume – counting cubes Volume of a cuboid	 Area of triangles Are of parallelograms Decimal notation up to 3 dp Miles/kilometres

Knowledge	Small Steps	Vocabulary
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].		
Geometry **Properties of shape** **draw 2-D shapes using given dimensions and angles** To know how to: 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 Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles. **Position and direction** To know how to: Describe positions on the full coordinate grid (all four quadrants) Draw and translate simple shapes on the coordinate plane, and reflect them in the axis.	Measure with a protractor Introduce angles Calculate angles Vertically opposite angles Angles in a triangle Angles in a triangle – special cases Angles in a triangle – missing angles Angles in special quadrilaterals Angles in regular polygons Draw shapes accurately Draw nets of 3-D shapes The first quadrant Four quadrants Translations Reflections	Nets Geometric shapes Regular polygons Radius Diameter Circumference Opposite angles Area in triangles Four quadrants Coordinate plane Reflect in the axis
Statistics To know how to: Interpret and construct pie charts and line graphs and use these to solve problems	Read and interpret line graphs Draw line graphs	Mean Average Pie charts

Knowledge	Small Steps	Vocabulary
Calculate and interpret the mean as an average.	Use line graphs to solve problems Circles Read and interpret pie charts Pie charts with percentages Draw pie charts The mean	