Ponteland Primary School's Approach to Maths

Mathematics as a discipline helps us to understand the world around us. We want all pupils at Ponteland Primary School to experience the beauty, power and enjoyment of mathematics and develop a sense of curiosity about the subject with a clear understanding. Our wider curriculum promotes critical thinking and risk taking, both of which are skills that underpin mathematics. Ultimately, we want all our children to believe that they CAN achieve in mathematics, and by demonstrating that making mistakes and correcting misconceptions makes us more secure learners, we foster a positive attitude towards the subject.

Early Years

Early Years Framework

Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically. Children should be able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers.
By providing frequent and varied opportunities to build and apply this understanding - such as using manipulatives, including small pebbles and tens frames for organising counting - children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built.
In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, 'have a go', talk to adults and peers about what they notice and not be afraid to make mistakes.

Nursery

Nursery maths planning is drawn from Development Matters and Birth to 5 Matters, along with expectations appropriate to our setting. A direct session is taught daily, whole class and in small groups. Mathematical discovery opportunities are always available through continuous provision.

AUTUMN	SPRING	SUMMER
This term during our daily maths meetings and within continuous provision / directed activities the children will practise:		
Number ● Fast recognition of up to 3 objects without having to count (subitising) ● Recite numbers past 5 ● Show numbers up to 5 **Numerical pattern** ● Compare quantities ● Talk about and explore 2D and 3D shapes using informal and mathematical language ● Select shapes for appropriate purposes ● Match patterns on two items	**Number** ● Link numerals and amounts ● One to one correspondence ● Cardinality **Numerical pattern** ● Understand position through words alone ● Compare objects using size, length, weight and capacity ● Talk about and identify patterns around them	**Number** ● Solve real world mathematical problems to 5 ● Experiment with own symbols and marks, as well as numerals **Numerical pattern** ● Describe a familiar route ● Combine shapes to make new ones ● Extend and create ABAB patterns ● Notice and correct errors in repeating patterns ● Describe a sequence of events, both real and fictional

Reception

Reception follow White Rose Maths planning and use Number Sense Maths animations during daily maths meetings. Continuous provision and direct activities are used for retrieval practice in the following week. Mathematical experiences form part of daily routines (such as self registration; fruit and snack time and tidying up).

AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
This half term during our daily maths meetings and within continuous provision / directed activities the children will practise:					
• Counting objects, actions, and sounds. • Subitising • Matching. Sorting & Comparing • Comparing amounts • Comparing size, mass & capacity • Exploring pattern - making simple patterns.	• Exploring the composition of numbers to 10 • Subitising • Automatic recall number bonds 0-10 • Representing, comparing and composition of 1,2,3 • Circles and triangles • Positional language • Representing, comparing and composition of 4 and 5 • Comparing 4,5 • One more and less • Shapes with 4 sides. • Time	• Exploring the composition of numbers to 10 • Subitising • Automatic recall number bonds 0-10 • Introducing zero • Comparing and composition of numbers to 5 • Comparing Mass • Comparing Capacity • Number 6, 7, 8 • Making pairs, pairs wise, doubles • Combining 2 groups • Length, height. • Time	• Exploring the composition of numbers to 10 • Subitising • Automatic recall number bonds 0-10 • Numbers 7, 8, 9 • Making pairs. • Combining groups • Number bonds • 3D shapes. • Pattern.	• Exploring the composition of numbers beyond 10. • Subitising • Automatic recall number bonds 0-10 • Number 10 and beyond– subitising, counting, sorting, matching, comparing, ordering. • Composition of numbers to 10 and beyond. • Counting patterns to 10 and beyond. • Spatial reasoning. • 3D shape • Matching, rotating, and manipulating shape • Pattern – AABB, BBA	• Exploring the composition of numbers beyond 10. • Subitising • Automatic recall number bonds 0-10 • Adding more • Taking away • Shape – spatial reasoning • Doubling • Sharing and grouping • Even and odd • Patterns and relationships
Ongoing throughout the year: • Link the number symbol with its cardinal number value. • Count beyond ten. • Compare numbers • Understand the 'one more/one less than' relationship between consecutive numbers. • Compare length, weight, and capacity. • Select, rotate, and manipulate shapes to develop spatial reasoning skills. • Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can. • Continue, copy, and create repeating patterns.					

Years 1 - 6

Content domains
Number
Geometry
Measurement
Statistics

National Curriculum Aims

- become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately
- **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions

Maths in Years 1 - 6 is taught using the White Rose Maths framework. Termly structures are followed where appropriate, and a small-step, mastery approach is adopted in all year groups. Number Sense Maths is used in Year 1 and from 2022-3 is being embedded in KS1 and Lower KS2. Lessons are supplemented with resources from a variety of sources, which are regularly shared and quality assessed in key stage teams.

Key Stage 1

The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the 4 operations, including with practical resources [for example, concrete objects and measuring tools].

At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency.

Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Year 1

Key performance indicators	
Expected standard	**Greater depth standard**
● **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, read and write numbers to 20 in words ● **Count in multiples of twos, fives and tens** ● **Read, write and interpret mathematical statements involving addition, plus, equals** ● **Represent (including symbols) and use number bonds and related subtraction facts within 20** ● **Add and subtract one digit and 2 digit numbers to 20, including 0** ● **Begin using the language of equal to, more than, less than, most and least** ● **Recognise, find and name a half as one of two equal parts of an object, shape or quantity** ● **Begin to recognise, find and name a quarter of one of four equal parts** ● Recognise and know the value of different denominations of coins and notes ● Describe position, direction and movement including whole, half, quarter and 3 quarter turns ● Compare, describe and solve practical problems for: Lengths and heights (long/short, double/half) Mass/weight (heavy/light) Capacity and volume (full/empty) Time (quicker, slower, earlier, later, before, after, next, first, today, yesterday, tomorrow, morning, afternoon, evening ● Recognise and use language relating to dates including days of the week, weeks, months and years ● Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times Recognise and name common 2D and 3D shapes	● Work in a systematic, logical way to find patterns, generalise and justify mathematical thinking ● Can reason about addition using the correct mathematical language *A pupil can explain that when you add 0 to a number the number does not change.* *A pupil can explain if 2 numbers added together will total more or less than 10* ● Children know and can prove that repeated addition is the same as multiplication. *(Eg, using an array or number line*) ● Children recognise the pattern that: when counting in 10s from 0 the answer will always end in 0; when counting in 5s from 0, the number will end in 0 or 5; and, when they count in 2s from 0, the answer will always be even ● A pupil can recognise and explain when a group of objects can be shared equally and when it cannot ● Pupils can solve word problems involving more than 1 step ● A pupil can find a half of a shape number or quantity and explain that each part must be equal ● A pupil can identify which of a selection of o'clock and half past times will occur next ● A pupil can arrange 4 containers of different sizes according to mass, or capacity Pupils can spot 2D shapes in the faces of 3D shapes.

Year 1

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Autumn 1	Number: Place Value (within 10)							
Autumn 2	Number: Addition and Subtraction (**Addition**) (within 10)							
Spring 1	Geometry: Shape	Number: Addition and Subtraction (**Subtraction**) (within 10)			Number: Place Value (within 20)		Number: Addition and Subtraction (within 20)	
Spring 2	Number: Addition and Subtraction (within 20)		Measurement: Length and Height		Number: Place Value (within 50, inc multiples of 2, 5 and 10)			
Summer 1	Number: Place Value (within 50, inc multiples of 2, 5 and 10)	Measurement : Weight and Volume	Number: Multiplication and Division (multiples of 2, 5 and 10 included)					
Summer 2	Number: Multiplication and Division (multiples of 2, 5 and 10 included)	Number: Fractions	Geometry : Position and Direction	Number: Place Value (within 100)		Measurement : Money	Measurement: Time	

Year 2

Key performance indicators	
Expected standard	**Greater depth standard**
● **Can count in steps of 2, 3, and 5** from 0, and in tens from any number, forward and backward ● **Can partition two-digit numbers into different combinations of tens and ones**. *This may include using apparatus (e.g. 23 is the same as 2 tens and 3 ones which is the same as 1 ten and 13 ones)* ● **Recall all number bonds to and within 10** and use these to reasons with and calculate bonds to and within 20. Know that is 7 + 3 = 10, then 17 + 3 = 20 ● **Can add and subtract 2 two-digit numbers within 100** (e.g. 48 + 35) and can demonstrate and explain their method using concrete apparatus or pictorial representations ● **Can recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables** to solve simple problems, demonstrating an understanding of commutativity as necessary (e.g. knowing they can make 7 groups of 5 from 35 blocks and writing 35 ÷ 5 = 7; sharing 40 cherries between 10 people and writing 40 ÷ 10 = 4; stating the total value of six 5p coins) ● **Can identify 1/3, 1/4, 1/2, 2/4, 3/4 of a length, shape, set of objects or quantity** and knows that all parts must be equal parts of the whole ● Can use different coins to make the same amount (e.g. pupil uses coins to make 50p in different ways; pupil can work out how many £2 coins are needed to exchange for a £20 note) ● Can read and draw hands on the time on the clock to the nearest 15 minutes ● Can describe properties of 2-D and 3-D shapes (e.g. the pupil describes a triangle: it has 3 sides, 3 vertices and 1 line of symmetry; the pupil describes a pyramid: it has 8 edges, 5 faces, 4 of which are triangles and one is a square) ● Read scales in divisions of ones, twos, fives and tens	● Can work in a systematic, logical way to find patterns, generalise and justify mathematical thinking ● Can read scales in divisions of ones, twos, fives and tens in a practical situation where not all numbers on the scale are given and estimate points in between ● Can use multiplication facts to make deductions outside known multiplication facts *(e.g. a pupil knows that multiples of 5 have one digit of 0 or 5 and uses this to reason that 18 × 5 cannot be 92 as it is not a multiple of 5)* ● Use reasoning about numbers and relationships to solve more complex problems and explain their thinking. E.g. solve more complex missing number problems *(e.g. 14 + – 3 = 17; 14 + △ = 15 + 27)* ● Can solve unfamiliar word problems that involve more than one step *(e.g. which has the most biscuits, 4 packets of biscuits with 5 in each packet or 3 packets of biscuits with 10 in each packet?)* ● Can read and draw on hands to show the time on the clock to the nearest 5 minutes ● Can describe similarities and differences of shape properties *(e.g. finds 2 different 2-D shapes that only have one line of symmetry; that a cube and a cuboid have the same number of edges, faces and vertices but can describe what is different about them)*

Year 2

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Autumn 1	Number: Place Value			Number: Addition and Subtraction				
Autumn 2	Number: Addition and Subtraction			Measurement: Money		Number: Addition and Subtraction		
Spring 1	Number: Multiplication and Division				Statistics		Geometry: Properties of Shape	
Spring 2	Geometry: Properties of shape	Number: Fractions			Number: Multiplication and Division	Geometry: Position and Direction		
Summer 1	Measurement: Length and Height	Measurement: Time	Measurement: Mass, Capacity and Temperature	Assessment window Statistics				
	Statistics	Measurement: Length and Height	Geometry: Position and Direction	Measurement: Mass, Capacity and Temperature		Measurement: Time		

Lower Key Stage 2

The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the 4 operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.

Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word-reading knowledge and their knowledge of spelling.

Year 3

Key performance indicators	
Expected standard	**Greater depth standard**
● **Compare and order numbers up to 1000** ● **Read and write numbers up to 1000 in numerals and words** ● **Count in multiples of 4, 8, 50 and 100** ● **Find 10 or 100 more or less than a given number** ● **Recognise the place value of each digit in a three digit number (hundreds, tens, ones)** ● Solve number problems and practical problems involving place value ● **Add and subtract numbers mentally**, including: a 3 digit number and ones, a 3 digit number and tens, a 3 digit number and hundreds ● **Add and subtract numbers with up to 3 digits using formal written methods of column addition and subtraction** – *see school calculation policy* ● Solve problems including missing number problems using number facts, place value and more complex addition and subtraction ● **Recall and use multiplication and division facts for the 3, 4 and 8 times 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 ● 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 show, using diagrams, equivalent fractions with small denominators ● **Compare and order unit fractions and fractions with the same denominators** ● Add and subtract fractions with the same denominator within one whole ● Measure, compare, add and subtract: lengths (m/cm/mm): mass (kg/g) volume/capacity (l/ml) including measuring the perimeter of simple 2D shapes	● Can work in a systematic, logical way to find patterns, generalise and justify mathematical thinking ● Can reason and represent place value in different ways using mathematical language ● Pupils can partition a 3-digit number and use that to work out its compliment to 1000, explaining their reasoning using the language of place value ● Can calculate mentally using efficient strategies ● Pupils can solve missing numbers problems such as 384 = 171 + ? ● Can use formal methods to solve problems, including multi-step and apply skills to create own multi-step problems using mathematical language: *Pupils can solve problems such as 'A fish weighs 50g, another fish weighs 8 times as much, how much does the larger fish weigh?'* *Pupils can solve problems such as, 'Dad drives a truck. Last week he drove 267 miles on Monday, 186 on Tuesday and 198 on Wednesday. This week Dad drove 282 miles in total. What is the difference in mileage between this week and last week."* ● Can recognise relationships between fractions and decimals and express them as equivalent quantities *Jimmy has 6 marbles. This is 0.4 or 2/5s of the total number. What is the total number of marbles* ● Can calculate using fractions and decimals *Calculate 2/4 + 3/4 = 5/4 and 5/4 – 3/4 = 2/4. They realise that 5/4 is greater than one and can suggest ways to record this* ● Can calculate with measures (time, capacity, length, mass) *6 toy cars balance 2 dolls. 4 dolls balance 1 toy robot. If the robot weighs 3 kg, what does each toy car weigh?* ● Can use mathematical reasoning to compare angles *Can you draw a quadrilateral with: 1 right angle? 2 right angles? 5 right angles? No right angles?*

• 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 1 to X11 and 12 hour and 24 hour clocks • Record and compare time in respect to seconds, minutes and hours • **Know the number of days in a month, the number of months in a year and the number of days in a year** – including a leap year • Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn: identify whether angles are greater than or less than a right angle • Identify horizontal and vertical lines and pairs of perpendicular and parallel lines • Interpret and present data using bar charts, pictograms and tables, including solving one step and 2 step questions using information presented in scales bar charts and pictograms and tables • Draw 2D shapes using mathematical language • **Recognise 2D and 3D shapes in different positions** and orientation and describe them	*Can you draw a triangle with 1 right angle? 2 Right angle* *Some of these are impossible, can you explain why?*

Year 3

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Autumn 1	Number: Place Value			Number: Addition and Subtraction				
Autumn 2	Number: Addition and Subtraction		Number: Multiplication and Division					
Spring 1	Number: Multiplication and Division					Statistics		
Spring 2	Measurement: Money		Measurement: Length and Perimeter					
Summer 1	Number: Fractions							
	Geometry: Properties of Shape		Measurement: Mass and Capacity		Measurement: Time			

Year 4

Key performance indicators	
Expected standard	**Greater depth standard**
Pupils will be able to… ● **Count in multiples of 6, 7, 9, 25 and 1000** ● Count backwards through zero to include negative numbers ● **Order and compare numbers beyond 1000, including up to 2 decimal places** ● **Find a 100 more or less than a given number** ● **Recognise the place value of each digit in a four digit whole number** ● Round any number to the nearest 10, 100 or 1000 ● Read roman numerals up to 100 ● **Add and subtract numbers up to 4 digit using formal written methods** – see school calculation policy ● **Solve two step problems in contexts, deciding which operations and methods to use and why** ● **Recall multiplication and division facts of multiplication tables up to 12 x 12** ● **Multiply 2 and 3 digit numbers by 1 digit number using a formal written layout – see school calculation policy** ● **Recognise and show, using diagrams (e.g fraction walls), common equivalent fractions, including adding and subtracting fractions** ● **Find fractions of a given quantity** ● Count up and down in hundredths: recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten, including representing as a decimal ● Round decimals with one decimal place to the nearest whole number ● Solve simple measure and money problems involving fractions and decimals to two decimal places, including formal column method where appropriate ● **Convert between different units of measure (kilometre to**	● Can work in a systematic, logical way to find patterns, generalise and justify mathematical thinking. ● Can reason about place value: *How many different ways can you write 5510. Pupils suggest ways such as 551 tens, 55 hundreds and 1 ten 5510 ones* *Arrange the digit cards 1 4 5 and 8 to make the number closest to 6000 and can justify their choice using the language of place value.* ● Can calculate mentally using efficient strategies *Write 3 calculations in which you would use mental calculation strategies and 3 where you would apply a column method and explain the decision you made with each calculation* *Can work out 345 x 6 mentally by calculating 300 x is 1800 40 x 6 is 240 and 5 x 6 is 30 to get 2070* ● Can apply formal methods to solve multi-step problems: *Sarah buys 5 pens at £1.25 each, 3 pencils at 38p each and a ruler for 85p. How much change does she get from £10?* ● Can recognise relationships between fractions and decimals and express them as equivalent quantities *Can you order these decimals and fractions on a number line? 0.35 3/4 0.5 1/5 4/9* ● Can calculate using fractions and decimals: *A soup recipe uses 3/4 as many onions as carrots. Jo is making the soup and has 8 carrots. How many onions does Jo use? Explain how you worked out the number of onions? Did you use the same method each time?* ● Can calculate with measures (time, capacity, length, mass) *Converting and ordering across a range of measures·* ● Can use mathematical reasoning to compare and order angles

metre: hour to minute)· • Solve problems involving converting time between analogue and digit 12 and 24 hour clocks • **Compare and classify geometric shapes**, using the language of orientation, including quadrilaterals and triangles, based on their properties and sizes, including Identifying acute, obtuse angles and right angles • Measure and calculate the perimeter and area of rectilinear shapes – including squares in m and cm • Identify lines of symmetry in 2D shapes presented in different orientations • Plot specified points and draw sides to complete a given polygon • Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs • Describe and plot positions on 2D grids as co-ordinates, including describing movements as translation	• Can compare angles in order to decide whether a polygon is regular

Year 4

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Autumn 1	Number: Place Value				Number: Addition and Subtraction			
Autumn 2	Measurement: Length and Perimeter		Number: Multiplication and Division					
Spring 1	Number: Multiplication and Division					Measurement: Time		
Spring 2	Measurement: Area	Number: Fractions						
Summer 1	Geometry: Properties of Shape		Number: Decimals					
Summer 2	Number: Decimals	Statistics	Measurement: Money		Geometry: Position and direction	Measurement: Time		

Upper Key Stage 2

The principal focus of mathematics teaching in upper key stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

By the end of year 6, pupils should be fluent in written methods for all 4 operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Pupils should read, spell and pronounce mathematical vocabulary correctly.

Year 5

Key performance indicators	
Expected standard	**Greater depth standard**
Pupils will be able to… ● **Read, write, order and compare numbers to at least 1000000 and determine the value of each digit, including up to 3 decimal places**	● Can work in a systematic, logical way to find patterns, generalise and justify mathematical thinking ● Can reason and represent place value in different ways using mathematical language *Pupils can work the connection between finding the difference between negative numbers and subtracting them*

• Round any number up to 1000000 to the nearest 10, 100, 100, 10,000 and 100,000, including rounding to the nearest whole number and one decimal place • Interpret negative numbers in context • **Count forwards and backwards with positive and negative whole numbers, including through zero** • **Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) – solve multi-step problems** • **Add and subtract whole numbers with more than 4 digits mentally** • **Solve problems involving multiples and factors,** including finding all factor pairs of a number, and common factors of two numbers. Including prime numbers, composite numbers, squares and cubes • **Solve problems involving multiplication and division,** including scaling by simple fractions and problems involving simple rates • **Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000** • **Compare and order fractions whose denominators are all multiples of the same number** • **Read and write decimal numbers as fractions** • **Recognise fractions and decimal equivalents of percent** • **Read, write, order and compare numbers with up to three decimal places** • Solve problems which require knowing percentage and decimal equivalents of a half, quarter, a fifth, two fifths and four fifths and those fractions with a denominator of a multiple of 10 or 25 • **Recognise mixed numbers and improper fractions and convert them from one form to the other** • **Add and subtract fractions with the same denominators and with denominators with the same multiples** • **Multiply proper fractions and mixed numbers by whole numbers** • **Convert between different units of metric measure (k/m) (cm/ml) (g/kg) (l/ml)** • 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 cm and square m and estimate the area of irregular shapes	• Can calculate mentally using efficient strategies *Pupils can write a variety of calculations derived from 15 + 63 = 78 and generalise to describe further calculations* *20 x 7 x 5 = 20 x 5 x 7 = 100 x 7 = 700* • Can use formal methods to solve problems, including multi- step *Sam and Tom have £67.80 between them. If Sam has £6.20 more than Tom, how much does Tom have?* • Can solve problems between fractions and decimals and percentages and express them as equivalent quantities *Jack and Jill each go out shopping. Jack spends ¼ of his money. Jill spends 20% of her money. Frank says Jack spent more because ¼ is greater than 20%. Alice says you cannot tell who spent more. Who do you agree with, Frank or Alice? Explain why.* • Using the numbers 3 4 5 and 6 makes this sum have the smallest possible answer: *I spent 3/5s of my money and had £1.40 left to buy lunch. How much money did I have to begin with?* • Can substitute values into a simple formula to solve problems in the context of perimeter and area, and can solve other correspondence problems, e.g: *A rectangle has a perimeter of 20. What is the largest possible area it could have?* • Can calculate with measures (time, capacity, length, mass) *True or false? 1.5kg + 600 g = 2.1kg + 300g 32 cm + 1.05m = 150 cm – 0.13 m* *3/4 L + 0.05 L = half of 1.6 L Explain your reasoning* • Can apply angle properties in different contexts • The pupil can construct rectangles and triangles using a protractor, and draw any rectilinear shape, with given dimensions, to the nearest millimetre

• Estimate and identify the volume of a cuboid • **Draw given angles and measure them in degrees** • Distinguish between regular and irregular polygons based on reasoning about equal sides and angles, including finding missing lengths and angles • Identify angles at a point, straight line and a quarter turn • Identify and describe and represent the position of shapes after reflection and translation • Identify 3D shapes from 2D representations • Complete, read and interpret information in tables, including timetables and line graphs – identifying patterns and trends	

Year 5

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Autumn 1	Number: Place Value			Number: Addition and Subtraction		Number: Multiplication and Division		
Autumn 2	Statistics		Measurement: Perimeter and Area			Number: Consolidation		
Spring 1	Number: Multiplication and Division			Number: Fractions				
Spring 2	Number: Fractions		Number: Decimals and Percentages			Geometry: Position and direction		
Summer 1	Number: Decimals and Percentages				Geometry: Properties of Shape			
Summer 2	Geometry: Properties of Shape	Geometry: Position and direction	Measurement: Converting units		Measurement: Volume			

Year 6

Key performance indicators	
Expected standard	**Greater depth standard**
Pupils will be able to… ● **Demonstrate an understanding of place value**, including large numbers and decimals (e.g. what is the value of the '7' in 276,541?; find the difference between the largest and smallest whole numbers that can be made from using three digits; 8.09 = 8 + 9 ?; 28.13 = 28 + + 0.03) ● Round any whole numbers to a given degree of accuracy ● Use negative numbers in context including calculating intervals across zero ● Perform mental calculations including mixed operations and large numbers, using efficient strategies such as manipulating expressions using commutative and distributive properties to simplify the calculation (e.g. 53 – 82 + 47 = 53 + 47 – 82 = 100 – 82 = 18; 20 × 7 × 5 = 20 × 5 × 7 = 100 × 7 = 700; 53 ÷ 7 + 3 ÷ 7 = (53 +3) ÷ 7 = 56 ÷ 7 = 8) ● **Use formal methods to solve multi-step problems** (e.g. find the change from £20 for three items that cost £1.24, £7.92 and £2.55; a roll of material is 6m long: how much is left when 5 pieces of 1.15m are cut from the roll?; a bottle of drink is 1.5 litres, how many cups of 175ml can be filled from the bottle, and how much drink is left?) Follow calculation policy ● Use knowledge of the order of operations to carry out calculation using the four operations (BODMAS) ● **Recognise the relationship between fractions, decimals and percentages** and can express them as equivalent quantities (e.g. one piece of cake that has been cut into 5 equal slices can be expressed as 1 5 or 0.2 or 20% of the whole cake)	● Can work in a systematic, logical way to find patterns, generalise and justify mathematical thinking ● Have sufficient depth of knowledge and understanding to reason and explain mathematical concepts and procedures and use them to solve a variety of problems, using mathematical language

• Express a remainder as a decimal or fraction • **Add and subtract fractions with different denominations and mixed numbers** • **Multiply pairs of proper fractions and divide fractions by whole numbers** • Use common factors to simplify fractions, compare and order fractions including fractions greater than one • **Calculate using fractions, decimals or percentages** (e.g. knowing that 7 divided by 21 is the same as 7 21 and that this is equal to 1 3; 15% of 60; 11 2 + 3 4; 7 9 of 108; 0.8 x 70). • Substitute values into a simple formula to solve problems (e.g. perimeter of a rectangle or area of a triangle). • Generate and describe linear number sequences • Express missing number problems algebraically • Find pairs of numbers that satisfies an equations with 2 unknown • Enumerate possibilities of combinations of 2 variables • **Calculate with measures (e.g. calculate length of a bus journey given start and end times; convert 0.05km into m and then into cm).** • Convert between miles and km • Calculate and compare volumes of cubes and cuboids • Solve problems involving ratio and scale factor • Reason why shapes with the same area can have different perimeters (and vice versa) • Calculate areas of parallelograms and triangles • **Use mathematical reasoning to find missing angles** (e.g. the missing angle in an isosceles triangle when one of the angles is given; the missing angle in a more complex diagram using knowledge about angles at a point and vertically opposite angles) • Draw 2D shapes using given angles and dimensions • Illustrate and name parts of the circle including radius, diameter and circumference • Interpret, construct and solve problems involving pie charts and line graphs • Calculate the mean as the average • Draw, translate and reflect points and shapes on a 4 quadrant grid including 2 step questions	

Year 6

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Autumn 1	Number: Place Value		Number: Addition and Subtraction	Number: Multiplication and Division				
Autumn 2	Number: BIDMAS	Number: Fractions						
	Geometry: Position and direction							
Spring 1	Number: Decimals and percentages			Number: Ratio		Measurement: Converting measures		
	Geometry: Properties of shape							
Spring 2	Measurement: Area and Perimeter		Number: Algebra			Statistics		
	Geometry: Properties of shape		Geometry: Position and direction					
Summer 1	Revision		SATs week	Investigations				
Summer 2	Number: Algebraic sequencing		Measurement: Time, timetables and money		Transition skills: Calculators, problem solving and working systematically			