

“Mathematics is, in its way, the poetry of logical ideas.” – Albert Einstein

Statement of Intent

Mathematics is an important creative discipline that helps us to understand and change the world. We want all pupils at Wantage CE Primary School to experience the beauty, power and **enjoyment** of mathematics and develop a sense of curiosity about the subject.

At Wantage CE Primary School, we foster positive ‘can do’ attitudes, believe all children can **flourish** in mathematics, and teach for secure and deep understanding of mathematical concepts. We encourage discussion and verbal reasoning to help secure understanding. We use mistakes as an essential part of **learning** and provide challenge for all pupils, to **inspire** them to tackle rich and sophisticated problems before acceleration through new content.

“The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils’ understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.”

~National Curriculum – Mathematics programme of study



Mathematics at Wantage CE Primary

Design Revision September 2022



We aim for all pupils to:

- ❖ Become fluent in the fundamental of mathematics so that they develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately
- ❖ Can solve problems by applying their mathematics to a variety of problems with increasing sophistication, including in unfamiliar contexts and to model real-life scenarios
- ❖ Can reason mathematically by following a line of enquiry and develop and present a justification, argument or proof using mathematical language
- ❖ Have an appreciation of number and number operations, which enables mental calculations and written procedures to be performed efficiently, fluently and accurately to be successful in mathematics



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Implementation

Planning and Lesson

At Wantage CE Primary school we follow the White Rose Maths Schemes of Learning to aid sequencing of work. Teachers will use the SOL, small steps sequencing, supporting materials and knowledge of the pupils to inform their weekly and daily lesson planning.

Lessons are 45 minutes long.

In lessons Teachers will consider the following strategies to aid learning by the pupils (each element does not need to be included in every lesson):

- Varied Fluency (Do it)
 - What it is/What it is not (conceptual variation)
 - Practise
 - Missing number questions
 - Deliberately chosen questions (procedural variation)
- Reasoning (Secure it)
 - Spot the mistake
 - Always, sometimes, never
 - Odd one out
 - Convince me/prove it/prove it with a picture
 - True or false
 - If I know..., I can work out...
 - Explain how you know
- Problem Solving (Deepen it)
 - Applying the maths to a problem
 - Problem solving activities
 - Word problems
 - All the possibilities
 - Working systematically
 - The answer is only the beginning
 - Applying other areas of maths

- Stem sentences including generalisations
- Use of my turn, your turn to encourage children to talk in sentences about mathematical concepts
- Explaining their mathematical thinking using precise mathematical vocabulary
- Procedural variation/conceptual variation
- Make links to other areas of maths or 'real' life situations.
- Small steps (don't make new concepts too big)
- Making links between the concrete, pictorial and abstract – manipulatives should be temporary and should act as a scaffold
- Children to be exposed to a range of concrete, visual or conceptual representations
- Misconceptions – Learning from our mistakes
- Use assessment to inform you of what the children do and do not know
- Fluent recall of facts
- Well timed interventions

Enhancements

"... [practice] ... seems entirely sensible as part of a sound learning process. Nobody ever excels at anything without lots of practice and that starts with the way we conduct our lessons"

Tom Sherrington, Rosenshine's Principles in Action

In addition to the daily maths lesson, there will be a daily practise session of key skills.

At Wantage CE Primary school we follow the Big Maths Framework to plan and teach daily practice sessions. The daily practice will take between 20 and 25 minutes per day. Each day children will practise an element of Counting, Learn Its (key number addition facts and multiplication tables), It's Nothing New and Calculation for a minimum of 5 minutes each. One day a week, instead of practising key skill the children will do a Beat That challenge at their own level.

Children can also explore a concept in even greater depth through 'Diving Even Deeper' challenges.

Children in EYFS, Year 1 and Year 2 will use the Numbots programme to support the learning and practise of key addition and subtraction facts.

Children in Y2 – Y6 will use the TimesTable Rockstar programme to support the learning and practise of key multiplication and division facts.



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Assessment

Teachers will use assessment for learning opportunities throughout a maths lesson and address any misconceptions with timely interventions. Daily marking of children's learning will also enable teachers to identify where extra support is needed before proceeding with the next concept.

In order to support their Teacher Assessment, teachers can use the Kangaroo 'Build a Mathematician' Tasks (Links to each task can be found on the Kangaroo Scheme of Work).

and

WRM End of block assessments <https://whiterosemaths.com/resources/assessment/primary-assessment/end-of-block-assessments/>

Teachers will make end of term judgements three times per year using their knowledge of the children. They will use the White Rose end of term assessments to help inform this judgement. They will also use the information to find any common gaps to inform future planning and intervention. At the end of KS1 and KS2, teachers will Teacher Assess each pupil against the National Framework. National Tests will be taken at the end of KS2.

Impact

The mathematics leader has developed a consistent approach to the teaching of mathematics across the school. Teachers plan learning following a 'do it, secure it, deepen it' approach. Pupils are given a range of challenging opportunities to practise and apply their skills to reason and problem solve in different contexts. Teachers have strong mathematical subject knowledge. They explain concepts and model learning well, using accurate mathematical vocabulary. They identify and tackle pupils' misconceptions swiftly, providing pupils with additional support if needed. Teachers make effective use of practical resources and pictorial representations to support pupils' conceptual understanding. Consequently, in mathematics pupils make good progress from their starting points. Pupils develop a secure understanding of number and calculation. They confidently tackle calculations and problems of increasing difficulty, using mathematical vocabulary to articulate their understanding accurately.

Wantage CE Ofsted Inspection – July 2019

Year	EYFS GLD	KS1	KS1 GD	KS2	KS2 GD
2016	64%	67%	4%	72%	0%
2017	72%	46%	6%	76%	17%
2018	70%	68%	25%	78%	24%
2019	77%	72%	20%	69%*	12%*

*Current approach (which supported the raising of standards in previous years) has been reviewed due to the dip in outcomes for 2019. Analysis showed that a greater focus was needed on Fractions, decimals and percentages and to continue to ensure that all children through school have solid arithmetic skills, especially in division where there is an apparent weakness.

Areas of Mathematics: **Number**; **number: calculation**; **number: fractions, decimals and percentages**; **Measure**; **Geometry**; **statistics**

Year/Term	Number counting and place value	Number comparing and ordering, Reading and writing	Measure	Geometry	Position and direction	Patterns
Nursery	<p>Through continuous provision children will:</p> <ul style="list-style-type: none"> ➤ Develop fast recognition of up to 3 objects, without having to count them individually ('subitising') ➤ Recite numbers past 5 ➤ Say one number for each item in order: 1,2,3,4,5 ➤ Know that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle') ➤ Show 'finger numbers' up to 5 ➤ Solve real world mathematical problems with numbers up to 5 	<p>Through continuous provision children will:</p> <ul style="list-style-type: none"> ➤ Compare quantities using language: 'more than', 'fewer than' ➤ Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5 ➤ Experiment with their own symbols and marks as well as numerals ➤ Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then...' 	<p>Through continuous provision children will:</p> <ul style="list-style-type: none"> ➤ Make comparisons between objects relating to size, length, weight and capacity. 	<p>Through continuous provision children will:</p> <ul style="list-style-type: none"> ➤ Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language: 'sides', 'corners'; 'straight', 'flat', 'round'. ➤ Select shapes appropriately: flat surfaces for building, a triangular prism for a roof, etc. ➤ Combine shapes to make new ones – an arch, a bigger triangle, etc. 	<p>Through continuous provision children will:</p> <ul style="list-style-type: none"> ➤ Understand position through words alone – for example, "The bag is under the table," – with no pointing. ➤ Describe a familiar route. ➤ Discuss routes and locations, using words like 'in front of' and 'behind'. 	<p>Through continuous provision children will:</p> <ul style="list-style-type: none"> ➤ Talk about and identify the patterns around them. For example: stripes on clothes, designs on rugs and wallpaper. ➤ Use informal language like 'pointy', 'spotty', 'blobs', etc. ➤ Extend and create ABAB patterns – stick, leaf, stick, leaf. ➤ Notice and correct an error in a repeating pattern. ➤ Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then...'

Year/Term	Autumn: Terms 1 and 2	Spring: Terms 3 and 4	Summer: Terms 5 and 6
Reception	Numbers and the Number System Subitising <ul style="list-style-type: none"> ➤ Perceptually subitise within 3, 4 then perceptually and conceptually within 5 ➤ Identify sub-groups in larger arrangements ➤ Experience subitising in a range of context, including using their fingers and temporal patterns by sounds Cardinality, ordinality and counting <ul style="list-style-type: none"> ➤ Relate the counting sequence to cardinality ➤ Count through rhyme and song ➤ Count using 1:1 correspondence ➤ To count accurately ➤ Explore the cardinality of 5 ➤ Begin to count beyond 5 ➤ Begin to recognise numerals, relating these to quantities Composition <ul style="list-style-type: none"> ➤ See that all numbers can be made of 1s ➤ Explore the concept of 'wholes' and 'parts' ➤ Explore the composition of numbers within 5 Comparison <ul style="list-style-type: none"> ➤ Understand that sets can be compared according to a range of attributes ➤ Use the language of comparison, including 'more than' and 'fewer than' ➤ Compare sets by looking, subitising and matching, knowing that when every object can be matched to one in the other set the amounts are equal 	Numbers and the Number System Subitising <ul style="list-style-type: none"> ➤ Continue to subitise within 5 ➤ Explore a range of patterns made by some numbers greater than 5 ➤ Experience patterns which show a small group and '1 more' ➤ Match arrangements to finger patterns ➤ Link patterns to 'doubles' Cardinality, ordinality and counting <ul style="list-style-type: none"> ➤ Develop verbal counting to 20 and beyond ➤ Continue to develop object counting skills ➤ Link counting to cardinality for quantities between 5 and 10 ➤ Order number, linking cardinal and ordinal representations of number Composition <ul style="list-style-type: none"> ➤ Explore the composition of 6 ➤ Begin to see that numbers within 10 can be composed of '5 and a bit' ➤ Explore the composition of odd and even numbers ➤ Begin to link even numbers to doubles ➤ Explore the composition of numbers within 10 Comparison <ul style="list-style-type: none"> ➤ Compare sets and use the language of comparison ➤ Compare set by matching, identifying when sets are equal ➤ Explore ways of making unequal sets equal ➤ Compare numbers, reasoning about which is more 	Numbers and the Number System Subitising <ul style="list-style-type: none"> ➤ Continue to practise increasingly familiar subitising arrangements, including those that expose '1 more' or 'doubles' patterns ➤ Identify when patterns show the same number but in a different arrangement, or when patterns are similar but have a different number ➤ Subitise structured and unstructured patterns, including those which show numbers within 10, in relation to 5 and 10 ➤ Begin to identify when it is appropriate to count and when groups can be subitised Cardinality, ordinality and counting <ul style="list-style-type: none"> ➤ Continue to develop verbal counting to 20 and beyond from different starting numbers ➤ Develop accuracy in verbal and object counting Composition <ul style="list-style-type: none"> ➤ Explore the composition of 10 Comparison <ul style="list-style-type: none"> ➤ Order sets of objects, linking this to ordinal numbers <p><i>Consolidate understanding of concepts previously taught</i></p>
	Measure and Geometry as part of continuous provision <ul style="list-style-type: none"> ➤ 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 <ul style="list-style-type: none"> ○ Investigate how shapes can be combined to make new shapes ○ Find 2D shapes within 3D shapes, including through printing or shadow play ➤ Continue, copy and create repeating patterns <ul style="list-style-type: none"> ○ Make patterns with varying rules and objects ➤ Compare length, weight and capacity <ul style="list-style-type: none"> ○ Begin to use comparative language 		

Areas of Mathematics: **Number**; number: calculation; number: fractions, decimals and percentages; **Measure**; **Geometry**; **statistics**

Year/Term	Autumn: Terms 1 and 2	Spring: Terms 3 and 4	Summer: Terms 5 and 6
Year 1	<p>Numbers and the Number system (Within 10)</p> <ul style="list-style-type: none"> ➤ read and write numbers from 1 to 10 in numerals and words. ➤ 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 <p>Calculating: Addition and Subtraction (to 10)</p> <ul style="list-style-type: none"> ➤ given a number, identify one more and one less ➤ count to and across 10, forwards and backwards, beginning with 0 or 1, or from any given number ➤ represent and use number bonds and related subtraction facts within 10 <p>Visualising and Constructing</p> <ul style="list-style-type: none"> ➤ 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] <p>Numbers and the Number system (Within 20)</p> <ul style="list-style-type: none"> ➤ read and write numbers from 1 to 20 in numerals and words ➤ 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 	<p>Calculating: Addition and Subtraction (to 20)</p> <ul style="list-style-type: none"> ➤ solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$ ➤ given a number, identify one more and one less ➤ count to and across 20, forwards and backwards, beginning with 0 or 1, or from any given number ➤ represent and use number bonds and related subtraction facts within 20 <p>Calculating: Addition and Subtraction</p> <ul style="list-style-type: none"> ➤ read, write and interpret mathematical statements involving addition (+), subtraction (−) and equals (=) signs ➤ add and subtract one-digit and two-digit numbers to 20, including zero ➤ solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$ <p>Numbers and the Number system (Within 50)</p> <ul style="list-style-type: none"> ➤ read and write numbers from 1 to 50 in numerals and words. ➤ 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 ➤ count, read and write numbers to 50 in numerals; count in multiples of twos, fives and tens <p>Measuring Space</p> <ul style="list-style-type: none"> ➤ measure and begin to record the following: lengths and heights; mass/weight; capacity and volume; time (hours, minutes, seconds) ➤ 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] 	<p>Calculating: Multiplication and division</p> <ul style="list-style-type: none"> ➤ 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 <p>Exploring Fractions</p> <ul style="list-style-type: none"> ➤ recognise, find and name a half as one of two equal parts of an object, shape or quantity ➤ recognise, find and name a quarter as one of four equal parts of an object, shape or quantity <p>Mathematical Movement</p> <ul style="list-style-type: none"> ➤ describe position, direction and movement, including whole, half, quarter and three-quarter turns <p>Numbers and the number system (within 100)</p> <ul style="list-style-type: none"> ➤ read and write numbers from 1 to 100 in numerals and words. ➤ 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 ➤ count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens <p>Exploring Money</p> <ul style="list-style-type: none"> ➤ recognise and know the value of different denominations of coins and notes <p>Exploring Time</p> <ul style="list-style-type: none"> ➤ recognise and know the value of different denominations of coins and notes ➤ recognise and use language relating to dates, including days of the week, weeks, months and years ➤ sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening] ➤ tell the time to the hour and half past the hour and draw the hands on a clock face to show these times

Year/Term	Autumn: Terms 1 and 2	Spring: Terms 3 and 4	Summer: Terms 5 and 6
Year 2	<p>Numbers and the number System</p> <ul style="list-style-type: none"> ➤ recognise the place value of each digit in a two-digit number (tens, ones) ➤ read and write numbers to at least 100 in numerals and in words ➤ use place value and number facts to solve problems ➤ identify, represent and estimate numbers using different representations, including the number line <p>Counting and comparing</p> <ul style="list-style-type: none"> ➤ compare and order numbers from 0 up to 100; use <, > and = signs ➤ count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward <p>Calculating: Addition and Subtraction</p> <ul style="list-style-type: none"> ➤ 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 ➤ 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 <p>Exploring Money</p> <ul style="list-style-type: none"> ➤ 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 	<p>Calculating: Multiplication and Division</p> <ul style="list-style-type: none"> ➤ 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 (x), 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 <p>Presentation of Data</p> <ul style="list-style-type: none"> ➤ 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 <p>Investigating Properties of Shape</p> <ul style="list-style-type: none"> ➤ identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid] ➤ identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line ➤ compare and sort common 2-D and 3-D shapes and everyday objects ➤ identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces <p>Exploring Fractions</p> <ul style="list-style-type: none"> ➤ recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity ➤ write simple fractions for example, $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$ 	<p>Mathematical Movement</p> <ul style="list-style-type: none"> ➤ 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) ➤ order and arrange combinations of mathematical objects in patterns and sequences <p>Exploring Time</p> <ul style="list-style-type: none"> ➤ know the number of minutes in an hour and the number of hours in a day. ➤ 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 <p>Measuring Space</p> <ul style="list-style-type: none"> ➤ choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels ➤ compare and order lengths, mass, volume/capacity and record the results using >, < and = <p>Assess/Enrich and preventing the gap.</p>

Year/Term	Autumn: Terms 1 and 2	Spring: Terms 3 and 4	Summer: Terms 5 and 6
Year 3	<p>Numbers and the number system</p> <ul style="list-style-type: none"> ➤ recognise the place value of each digit in a three-digit number (hundreds, tens, ones) ➤ read and write numbers up to 1000 in numerals and in words ➤ identify, represent and estimate numbers using different representations ➤ solve number problems and practical problems involving these ideas <p>Counting and comparing</p> <ul style="list-style-type: none"> ➤ compare and order numbers up to 1000 ➤ count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number ➤ solve number problems and practical problems involving these ideas <p>Calculating: Addition and Subtraction</p> <ul style="list-style-type: none"> ➤ add and subtract numbers mentally, including: a three-digit number and ones; a three-digit number and tens; a three-digit number and hundreds ➤ add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction ➤ estimate the answer to a calculation and use inverse operations to check answers ➤ solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction <p>Calculating: Multiplication and Division</p> <ul style="list-style-type: none"> ➤ 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 	<p>Calculating: Multiplication and Division</p> <ul style="list-style-type: none"> ➤ 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 <p>Exploring Money</p> <ul style="list-style-type: none"> • add and subtract amounts of money to give change, using both £ and p in practical contexts <p>presentation of Data</p> <ul style="list-style-type: none"> ➤ 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 <p>Measuring Space</p> <ul style="list-style-type: none"> ➤ measure the perimeter of simple 2-D shapes <p>Exploring Fractions</p> <ul style="list-style-type: none"> ➤ recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators ➤ recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators ➤ recognise and show, using diagrams, equivalent fractions with small denominators ➤ compare and order unit fractions, and fractions with the same denominators 	<p>Calculating fractions and decimals</p> <ul style="list-style-type: none"> ➤ 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 ➤ add and subtract fractions with the same denominator within one whole [for example, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$] <p>Exploring Time</p> <ul style="list-style-type: none"> ➤ tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks ➤ estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight ➤ know the number of seconds in a minute and the number of days in each month, year and leap year ➤ compare durations of events [for example to calculate the time taken by particular events or tasks] <p>Investigating Angles</p> <ul style="list-style-type: none"> ➤ recognise angles as a property of shape or a description of a turn ➤ identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle <p>Visualising and constructing</p> <ul style="list-style-type: none"> ➤ identify horizontal and vertical lines and pairs of perpendicular and parallel lines ➤ draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them <p>Measuring Space</p> <ul style="list-style-type: none"> ➤ measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) <p>Assess/Enrich and preventing the gap.</p>

Year/Term	Autumn: Terms 1 and 2	Spring: Terms 3 and 4	Summer: Terms 5 and 6
Year 4	<p>Numbers and the Number system</p> <ul style="list-style-type: none"> ➤ recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones) ➤ read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value ➤ identify, represent and estimate numbers using different representations <p>Counting and Comparing</p> <ul style="list-style-type: none"> ➤ order and compare numbers beyond 1000 ➤ count in multiples of 6, 7, 9, 25 and 1000 ➤ count backwards through zero to include negative numbers <p>Checking, approximating and estimating</p> <ul style="list-style-type: none"> ➤ round any number to the nearest 10, 100 or 1000 ➤ estimate and use inverse operations to check answers to a calculation ➤ solve number and practical problems that involve all of the above and with increasingly large positive numbers <p>Calculating: Addition and Subtraction</p> <ul style="list-style-type: none"> ➤ find 1000 more or less than a given number ➤ add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate ➤ solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why <p>Calculating Space</p> <ul style="list-style-type: none"> ➤ measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres ➤ convert between different units of measure [for example, kilometre to metre; hour to minute] <p>Calculating: Multiplication and Division</p> <ul style="list-style-type: none"> ➤ recall multiplication and division facts for multiplication tables up to 12×12 ➤ recognise and use factor pairs and commutativity in mental calculations ➤ use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers 	<p>Calculating: Multiplication and Division</p> <ul style="list-style-type: none"> ➤ multiply two-digit and three-digit numbers by a one-digit number using formal written layout ➤ solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects <p>Calculating Space</p> <ul style="list-style-type: none"> ➤ find the area of rectilinear shapes by counting squares <p>Exploring Fractions, Decimals and Percentages</p> <ul style="list-style-type: none"> ➤ count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten ➤ 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 ➤ recognise and write decimal equivalents of any number of tenths or hundredths ➤ recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\%$ <p>Calculating Fractions Decimals and Percentages</p> <ul style="list-style-type: none"> ➤ add and subtract fractions with the same denominator ➤ 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 ➤ recognise and show, using diagrams, families of common equivalent fractions ➤ solve simple measure and money problems involving fractions and decimals to two decimal places 	<p>Exploring Fractions, Decimals and Percentages</p> <ul style="list-style-type: none"> ➤ recognise and write decimal equivalents of any number of tenths or hundredths ➤ round decimals with one decimal place to the nearest whole number ➤ compare numbers with the same number of decimal places up to two decimal places ➤ solve simple measure and money problems involving fractions and decimals to two decimal places <p>Exploring Time and Money</p> <ul style="list-style-type: none"> ➤ 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 ➤ estimate, compare and calculate different measures, including money in pounds and pence <p>Presentation of Data</p> <ul style="list-style-type: none"> ➤ interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs ➤ solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs <p>Investigating Properties of Shape</p> <ul style="list-style-type: none"> ➤ 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 ➤ compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes <p>Investigating Angles</p> <ul style="list-style-type: none"> ➤ identify acute and obtuse angles and compare and order angles up to two right angles by size <p>Mathematical Movement</p> <ul style="list-style-type: none"> ➤ describe positions on a 2-D grid as coordinates in the first quadrant ➤ plot specified points and draw sides to complete a given polygon ➤ describe movements between positions as translations of a given unit to the left/right and up/down <p>Assess/Enrich and preventing the gap.</p>

Year/Term	Autumn: Terms 1 and 2	Spring: Terms 3 and 4	Summer: Terms 5 and 6
Year 5	<p>Counting and Comparing</p> <ul style="list-style-type: none"> ➤ read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit ➤ read Roman numerals to 1000 (M) and recognise years written in Roman numerals ➤ 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 <p>Checking, Approximating and Estimating</p> <ul style="list-style-type: none"> ➤ round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000 and 100,000 ➤ round decimals with two decimal places to the nearest whole number and to one decimal place ➤ use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy <p>Calculating: Addition and Subtraction</p> <ul style="list-style-type: none"> ➤ add and subtract numbers mentally with increasingly large numbers ➤ add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) ➤ solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why <p>Presentation of Data</p> <ul style="list-style-type: none"> • solve comparison, sum and difference problems using information presented in a line graph <p>Numbers and the Number System</p> <ul style="list-style-type: none"> ➤ identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers ➤ know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers ➤ establish whether a number up to 100 is prime and recall prime numbers up to 19 ➤ 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 <p>Calculating Space</p> <ul style="list-style-type: none"> ➤ measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres 	<p>Calculating: Multiplication and Division</p> <ul style="list-style-type: none"> ➤ multiply and divide numbers mentally drawing upon known facts ➤ multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 ➤ 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 ➤ 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 ➤ solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign <p>Exploring Fractions, Decimals and Percentages</p> <ul style="list-style-type: none"> ➤ 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 and use thousandths and relate them to tenths, hundredths and decimal equivalents ➤ read and write decimal numbers as fractions [for example, $0.71 = \frac{71}{100}$] ➤ read, write, order and compare numbers with 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 <p>Calculating Fractions, Decimals and Percentages</p> <ul style="list-style-type: none"> ➤ 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, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1 \frac{1}{5}$] ➤ add and subtract fractions with the same denominator and denominators that are multiples of the same number ➤ multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams ➤ solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25 	<p>Exploring Fractions, Decimals and Percentages</p> <ul style="list-style-type: none"> ➤ solve problems involving number up to three decimal places ➤ multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 <p>Calculating space</p> <ul style="list-style-type: none"> ➤ estimate volume [for example, using 1 cm^3 blocks to build cuboids (including cubes)] and capacity [for example, using water] <p>Visualising</p> <ul style="list-style-type: none"> ➤ identify 3-D shapes, including cubes and other cuboids, from 2-D representations <p>Investigating Properties of Shape</p> <ul style="list-style-type: none"> ➤ 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 <p>Investigating Angles</p> <ul style="list-style-type: none"> ➤ know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles ➤ draw given angles, and measure them in degrees ($^\circ$) ➤ identify angles at a point and one whole turn (total 360°); angles at a point on a straight line and $\frac{1}{2}$ a turn (total 180°); other multiples of 90° <p>Mathematical Movement</p> <ul style="list-style-type: none"> ➤ 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 <p>Measuring Space</p> <ul style="list-style-type: none"> ➤ convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) ➤ understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints ➤ use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling <p>Exploring Time</p> <ul style="list-style-type: none"> ➤ solve problems involving converting between units of time ➤ complete, read and interpret information in tables, including timetables <p>Assess/Enrich and preventing the gap.</p>



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	➤ calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm ²) and square metres (m ²) and estimate the area of irregular shapes	➤ solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates	
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Year/Term	Autumn: Terms 1 and 2	Spring: Terms 3 and 4	Summer: Terms 5 and 6
Year 6	<p>Numbers and the Number System</p> <ul style="list-style-type: none"> ➤ 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 ➤ read, write, order and compare numbers up to 10 000 000 and determine the value of each digit ➤ use negative numbers in context, and calculate intervals across zero ➤ identify common factors, common multiples and prime numbers <p>Checking, Approximating and Estimating</p> <ul style="list-style-type: none"> ➤ solve problems which require answers to be rounded to specified degrees of accuracy ➤ use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy ➤ round any whole number to a required degree of accuracy <p>Calculating</p> <ul style="list-style-type: none"> ➤ perform mental calculations, including with mixed operations and large numbers ➤ solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why ➤ multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication ➤ solve problems involving addition, subtraction and multiplication ➤ use their knowledge of the order of operations to carry out calculations <p>Calculating: Division</p> <ul style="list-style-type: none"> ➤ divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division; interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context ➤ divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context ➤ use written division methods in cases where the answer has up to two decimal places ➤ solve problems involving division <p>Exploring Fractions, Decimals and Percentages</p> <ul style="list-style-type: none"> ➤ use common factors to simplify fractions; use common multiples to express fractions in the same denomination 	<p>Revision of Essential Knowledge</p> <p>Calculating Fractions, Decimals and Percentages</p> <ul style="list-style-type: none"> ➤ 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, $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$] ➤ divide proper fractions by whole numbers [for example, $\frac{1}{3} \div 2 = \frac{1}{6}$] ➤ multiply one-digit numbers with up to two decimal places by whole numbers ➤ solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison <p>Algebraic proficiency</p> <ul style="list-style-type: none"> ➤ use simple formulae ➤ convert between miles and kilometres <p>Solving Equations and Inequalities</p> <ul style="list-style-type: none"> ➤ enumerate possibilities of combinations of two variables ➤ express missing number problems algebraically ➤ find pairs of numbers that satisfy an equation with two unknowns <p>Measuring Space</p> <ul style="list-style-type: none"> ➤ 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 <p>Calculating Space</p> <ul style="list-style-type: none"> ➤ recognise that shapes with the same areas can have different perimeters and vice versa ➤ calculate the area of parallelograms and triangles ➤ calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³), and extending to other units [for example, mm³ and km³] ➤ recognise when it is possible to use formulae for area and volume of shape ➤ solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate <p>Proportional Reasoning</p> <ul style="list-style-type: none"> ➤ solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts 	<p>Revision of Essential Knowledge</p> <p>Visualising and Constructing</p> <ul style="list-style-type: none"> ➤ draw 2-D shapes using given dimensions and angles ➤ recognise, describe and build simple 3-D shapes, including making nets <p>Investigating Properties of Shape</p> <ul style="list-style-type: none"> ➤ 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 <p>Investigating Angles</p> <ul style="list-style-type: none"> ➤ recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles <p>Presentation of Data</p> <ul style="list-style-type: none"> ➤ interpret and construct pie charts and line graphs and use these to solve problems <p>Measuring Data</p> <ul style="list-style-type: none"> ➤ calculate and interpret the mean as an average <p>Secondary Transition Units to be agreed with KS3</p> <p>Mathematical Investigations</p> <p>Problem Solving Tasks</p> <p>Maths Within the Curriculum</p> <p>Any Units of work that need to be covered</p>



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	<ul style="list-style-type: none">➤ compare and order fractions, including fractions > 1➤ associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $\frac{3}{8}$]➤ recall and use equivalences between simple fractions, decimals and percentages, including in different contexts Mathematical Movement <ul style="list-style-type: none">➤ describe positions on the full coordinate grid (all four quadrants)➤ draw and translate simple shapes on the coordinate plane, and reflect them in the axes	<ul style="list-style-type: none">➤ 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 Patterns <ul style="list-style-type: none">➤ generate and describe linear number sequences	
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