Maths at Oxenhope C of E Primary School

School Vision

We provide the rich soil allowing children to flourish and develop deep roots. We nurture **growth**, enabling children to thrive as our Christian values blossom in their lives. We cultivate a sense of pride in our rural **community** where children are **loved** and valued.

May our children flourish in their youth like well-nurtured plants. Psalm 144 v 12.

Throughout our curriculum and school life, along with our school vision, these three golden strands permeate through everything we do.

Community

Jesus often spoke of unity in our communities and encouraging one another on our journey. He spoke of bearing each other's burdens in love and helping those in need.

'Live in harmony with one another.' Romans 12 v 16

Love

It says in the Bible that God is Love and encompasses all that is loving and good. Jesus showed the ultimate unconditional love when he laid down his life for us on the cross. Therefore, this love should lead to a desire to love other people.

'Live a life filled with love, following the example of Christ. He loved us and offered himself as a sacrifice for us.' Ephesians 5 v 2

Growth

Just like a plant, we must endure the difficult times along with the good; but God has sent us his Holy Spirit to help and strengthen us so we can bear fruit and grow in the likeness of Christ.

'Grown in the grace and knowledge of our Lord and Saviour Jesus Christ.' 2 Peter 3 v 18

Maths Oxenhope

Intent:

In maths we aim to provide a rich curriculum that progresses skills and knowledge. It allows pupils time to explore maths and reflect upon their learning. They can apply their knowledge to a variety of areas, taking their learning forward with them into the wider world. Our aim is to create fluent mathematicians that are resilient and creative in their approach to maths. Pupils will be able to persevere whilst completing more and more sophisticated maths problems.

Implementation:

Every child at Oxenhope C of E Primary School will have access to a knowledge rich curriculum designed to allow them to sit at any table and maximise their future life chances. Below, is a high-level overview of the critical knowledge children will learn in this particular subject at each key stage from Reception to Year 6. This is to equip students with the cultural capital they need to succeed in whichever field they pursue. The curriculum is planned as a spiral with topics, within mathematics, being revisited frequently and built upon. Pupils will begin by developing their fluency within an activity before they are immersed in problem solving and reasoning that will help them to embed learning and to think creatively when applying maths to a wide range of contexts. Pupils are also drip fed learning through-out the year which allows them to develop rapid recall of mathematical facts, which they will then be able to apply to a wide range of activities and problems.

A typical math lesson at Oxenhope, begins with a maths warm up, where prior learning or quick recall activities take place. Then pupils will gather the required knowledge through high-level teacher input before they move on to working on activities designed to challenge any pupil regardless of their starting point whether that is fluency, reasoning or problems solving tasks.

Impact

Pupils will leave us prepared for the next stage in their lives with:
- Quick recall of facts and procedures
- The flexibility and fluidity to move between different contexts and representations of mathematics
- The ability to recognise relationships and make connections in mathematics
- Confidence and belief that they can achieve
- The knowledge that maths underpins most of our daily lives
- Skills and concepts that have been mastered.

A mathematical concept or skill has been leant when a child can show it in multiple ways, using the mathematical language to explain their ideas, and can independently apply the concept to new problems in unfamiliar situations and this is the goal for our children.

These will be assessed through assessment, tracking, pupil progress meetings, performance management, moderation, and standardisation.

Maths Long Term Plan

Types of Knowledge in maths

Substantive Knowledge:
Key facts, concepts, principles and explanatory frameworks. This includes number facts, timetables and other mathematical components.

Disciplinary Knowledge:
Needed in order to think, process and understand the subject. It includes how to work things out, reason and problem solve.

Procedural Knowledge:
Procedures such as long division

Maths Long Term Plan

Year Group	Development matters	Substantive knowledge Key facts	Vocabulary
Reception Autumn 1	Continue, copy and create repeating patterns. Explore the composition of numbers to 10. Count objects, actions and sounds. Compare capacity	To learn numbers 1-5 To know the shapes triangle, circle, rectangle, square Repeating patterns Mathematical vocabulary	Triangle Circle Rectangle Square More than
Reception Autumn 2	Link number /symbol with its cardinal number value. Compare numbers. Understand the 'one more than/one less than' relationship between consecutive numbers. Select, rotate and manipulate shapes to develop spatial reasoning skills.	To count back from 5 – 0 Number bonds within 5 Introduction to Part whole models Introduction to tens frames Position Manipulation of shapes	Less than Compare Combine Part whole model
Reception Spring 1	Subitising Link number with its cardinal number value. Compare numbers. Understand one more than/one less than' with consecutive numbers. Explore composition of numbers to 10.	Children know what 6-10 look like. The children can recall doubles to 10 Begin to subitise	Multiple Double More Less back
Reception	Link the number with its cardinal number value. Count beyond ten. Compare numbers. Automatically recall number bonds for numbers 0–5 and some to 10. Continue, copy and create repeating patterns.	Subitising doubles and 5+ Count backwards and able to say 1 less than	Half Part whole Compare

Spring 2	Compare length, weight and capacity		Know some number bonds to 10 Know half of 10, 8, 6, 4, 2	Less than Number bonds
Reception Summer 1	Count beyond ten. Explore the composition of numbers to 10. Select, rotate and manipulate shapes to. 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. Compare length, weight and capacity		To count on from 10 To recognise 2d and 3d shapes To know what a ruler is Double and halve within 10 Subitise up to 10 odd/even	Ruler Rectangle Numbers to 20 – orally Measure sort
Reception Summer 2	Compare length, weight and capacity. Explore the composition of numbers to 10. Automatically recall number bonds for numbers 0–5 and some to 10 Count beyond ten.		Can talk through their own subtraction story maps Use the part whole method and share equally. Number bonds	Part Whole Equal Share Double true
		National Curriculum objectives	**Units covered**	**Substantive knowledge**	**Vocabulary**
Yr 1 A 1	-Count to and across 100, forwards and backwards beginning with 0 or 1 of any given number (10) -count, read and write numbers to 100 in numerals; count in multiples of 2s, 5s and 10s – focus on 2s -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 (focus on tens frames and number lines) -read and write numbers from 1 to 20 in numerals and words (focus to 10) -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] Focus on 2D	Geometry, Number and Place Value	Bonds to 10, pairs, doubles, Numeral writing, Know squares and rectangles, cubes and cuboids, count and subitise numbers to 10, count forward and backwards, order and compare numbers to 20, use a number line Count in twos Count in 5s Count in 10s Know by heart number bonds to 10	Vertical, horizontal, odd, even, straight, and curved. face, pyramids, prisms, cubes, cuboids, narrow, wide, same length, different length. Numbers to 20, more than, less than, fewer than, greater than, next, before, near, close, far.
Year 1 A 2	-Count to and across 100, forwards and backwards beginning with 0 or 1 of any given number (20) -Given a number, identify 1 more and 1 less (10/20) -read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs (1 more/less)	Place Value Addition and subtraction Multiplication and division	1 more/less – part whole, tens frame, bonds to 10, subtract from 1-10 concrete and pictorial, count in 2, 5, 10 One more or less than any number between 1-100	odd, even, less than, more than, take away, fewer, how many more, sum, total, plus,

	-add and subtract one-digit and two-digit numbers to 20, including 0 (focus to 10) -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 (focus on concrete)			minus, add, altogether, equal, left over, gone. groups of,
Year 1 Sp 1	-read, write and interpret mathematical statements involving addition (+), subtraction (−) and equals (=) signs (single digits from/to 20) - represent and use number bonds and related subtraction facts within 20 (Focus on representing and using number bonds) -add and subtract one-digit and two-digit numbers to 20, including 0 (focus on 20 - challenge to 2 digits) -solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ? − (focus on concrete and pictorial) - measure and begin to record the following: lengths and heights - compare, describe and solve practical problems for: lengths and heights [eg, long/short, longer/shorter, tall/short, double/half] (compare and describe) -compare, measure, record, describe:-capacity and volume [for example, full/empty, more than, less than, half, half full, quarter] -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] (Focus on 3D) -describe position, direction and movement, including whole, half, quarter and three-quarter turns	Geometry Length and height and capacity Addition and subtraction	Learn about circles, spheres and cylinders. Learn about full turns and half turns on a clock. Measure in none standard units and centimetres. Add and subtract within 20. Know bonds to 20. Know by heart number bonds to 20 Maurits Cornelius Escher (Tesselating patterns – links with art)	Sphere, cylinder, cone, apex, face, curved surface, half-turn, full-turn, O'clock, half past. cm's, length, longer than, shorter than, taller than, wider than, narrower than.
Year 1 SP 2	-Count to and across 100, forwards and backwards beginning with 0 or 1 of any given number (50) -count, read and write numbers to 100 in numerals; (50) count in multiples of 2s, 5s and 10s (focus on 5s) -Given a number, identify 1 more and 1 less (50-ending in 9) -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 (tens frame / base 10 – building to 50) -read and write numbers from 1 to 20 in numerals and words(focus to 20) -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 (focus on pictorial)	Number and place value Weight Time Multiplication and division	Know that 10 ones makes 10. Build, read and make numbers to 50. Compare and order numbers to 50. Count in 2s and 10s to 50. Compare weights – grams, kilograms. Compare capacity One more or less than any number between 1-100 Count in twos Count in 5s Count in 10s	heavier, lighter, mass, full, empty, more than, less than, half, half full.

	-recognise, find and name a half as 1 of 2 equal parts of an object, shape or quantity(focus on objects and shapes) recognise, find and name a quarter as 1 of 4 equal parts of an object, shape or quantity (focus on objects and shapes) -compare, describe, measure, record: mass/weight [for example, heavy/light, heavier than, lighter than](focus on compare and describe) -compare, describe: time (quicker, slower, earlier, later] (focus on describe) -measure and begin to record: time (hours, minutes, seconds) (focus on measure) -sequence events in chronological order using language [eg, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening](focus on language and sequence) -recognise and use language relating to dates, including days of the week, weeks, months and years (focus on days of the week and number of weeks) -Look at clock faces to discuss features (Focus on features/ past and to) - recognise and know the value of different denominations of coins and notes (link with 2s, 5s, 10s)			
Year 1 S 1	-Count to and across 100, forwards and backwards beginning with 0 or 1 of any given number (100) -count, read and write numbers to 100 in numerals; (100) count in multiples of 2s, 5s and 10s (focus on 10s) -Given a number, identify 1 more and 1 less (100-ending in 9 and 1) -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 (base 10 – building to 100) **-**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 (focus on arrays) **-**recognise, find and name a half as 1 of 2 equal parts of an object, shape or quantity (Focus on quantity) -recognise, find and name a quarter as 1 of 4 equal parts of an object, shape or quantity (focus on quantity)	Multiplication and division Place value (to 100) Fractions	Sharing, Equal and unequal groups, 2s and 5s Understand doubles and arrays, grouping and dividing. Recognise, compare and build to 100. Partition to 99. Halves and quarters of shapes and amounts One more or less than any number between 1-100 Count in twos Count in 5s Count in 10s Recall doubles of all numbers to at least ten	sharing, grouping, halving, doubling. halves, quarters, parts, equal
Year 1 S 2	-read, write and interpret mathematical statements involving addition (+), subtraction (−) and equals (=) signs (relate to measure) - represent and use number bonds and related subtraction facts within 20 (focus on related subtraction facts) -add and subtract one-digit and two-digit numbers to 20, including 0 (focus on 2 digits)	Time Money Geometry Addition and Subtraction Measure	Use chronological terms. Know days of the week and months of the year, half past and o clock, recognise coins and notes. Whole /half turns, clockwise / anticlockwise	earlier, later, months of the year, days of the week. left turns, right turns, clockwise, anti-clockwise

		National Curriculum objectives	Units covered	Substantive knowledge Inc. Maths Roots	Vocabulary
		-solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ? – (focus on missing number problems and application) -compare, describe and solve practical problems for: lengths and heights [eg, long/short, longer/shorter, tall/short, double/half](focus on double and half) -compare, describe, measure, record and solve practical problems for: mass/weight [for example, heavy/light, heavier than, lighter than](focus on measure and record) -Problem solve for:-capacity and volume [for example, full/empty, more than, less than, half, half full, quarter] - solve practical problems for: time (quicker, slower, earlier, later] (focus on comparing time) -measure and begin to record: time (hours, minutes, seconds) (focus on recording time) -sequence events in chronological order using language [eg, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening](explain why or how they know) -recognise and use language relating to dates, including days of the week, weeks, months and years (focus on 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 (moved beyond features to half past and to the hour) - recognise and know the value of different denominations of coins and notes (apply within calculations) -describe position, direction and movement, including whole, half, quarter and three-quarter turns (focus on quarter, half and 3 quarter turns -relate to time)			
Yr2 A 1		-Count in steps of 2, 3, and 5 from 0, and in 10s from any number, forward and backward. -Recognise the place value of each digit in a two-digit number (10s, 1s) compare and order numbers from 0 up to 100; (not using <, > and = signs) -read and write numbers to at least 100 in numerals and in words (Focus on reading) -use place value and number facts to solve problems -solve problems with addition and subtraction: (using concrete objects and pictorial representations) -add and subtract numbers using concrete objects, pictorial representations, including: a two-digit number and 1s, a two-digit number and 10s 2 two-digit numbers (focus on pictorial)	Number and place value, addition and subtraction	Building and drawing 2 digit numbers (tens and ones). Compare and order numbers to 100. Use money (10p/1p) bonds to 20. Addition any order, not subtraction. Problem solving Know by heart doubles of all numbers to twenty (and warmups) Add or subtract any single digit numbers (and warm ups)	tens, ones, place value Tens, ones, addition, subtraction, equal to. + - =

	-show that addition of 2 numbers can be done in any order (commutative) and subtraction of 1 number from another cannot			
Yr 2 A 2	-recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers (not 5s/odd and even) -calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs (introduction to signs) -solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts (focus on repeated addition and using materials) -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 -identify and describe the properties of 2-D shapes, including the number of sides, and line symmetry in a vertical line (Not symmetry) -identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces (focus on 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]	Multiplication and division, fractions and geometry	Repeated addition for multiplication. Introduce x symbol. 2/5 times tables. Division using grouping. Making groups of 2/10 Introduce x ÷ signs. Finding halves, quarters and thirds of shapes, amounts, lengths. Knowing half is 2/4, Describe properties of 2d and 3d shapes Know by heart all multiplication facts for 2 to 2 x 12 (and warmups) Know by heart all multiplication facts for 10 to 10 x 12 (and warmups) Know by heart all division facts for 2 up to 24 (and warmups) Know by heart all division facts for 10 up to 120 (and warmups)	X ÷ =, multiply, lots of, groups of, divide, share Half, quarter, third, two quarters, *equivalent* Sides, edges, vertices, faces, 2-d shape, 3-D shape, cube, cuboid, prism, pyramid
Yr 2 Sp 1	count in steps of 2, 3, and 5 from 0, and in 10s from any number, forward and backward (tens) -recognise the place value of each digit in a two-digit number (columns) -Compare and order numbers from 0 up to 100; use <, > and = signs -solve problems with addition and subtraction: (using concrete objects and pictorial representations – subtract 2/3 digits – introduce written method) -Use addition and subtraction facts to 20 fluently add and subtract numbers focus on mental strategies, including: two-digit number and 1s,a two-digit number and 10s, 2 two-digit numbers (adding 3 1d numbers, not crossing 10) -Recap that addition of 2 numbers can be done in any order (commutative) and subtraction of 1 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	Place Value and numbers, 4 operations	Draw number lines. Partition a 2 digit number into tens and ones. Comparing and ordering numbers to 100 using < > and = Compare and order lengths, mass, volume/ Add multiples of 10 Subtracting 10 from a 2 digit number Use inverse between addition and subtraction Add and subtract 3 small numbers Know by heart all number bonds to 6, 7, 8 and 9 (and warmups) Order any 2 numbers between 0 and 100 using <> (and warmups)	

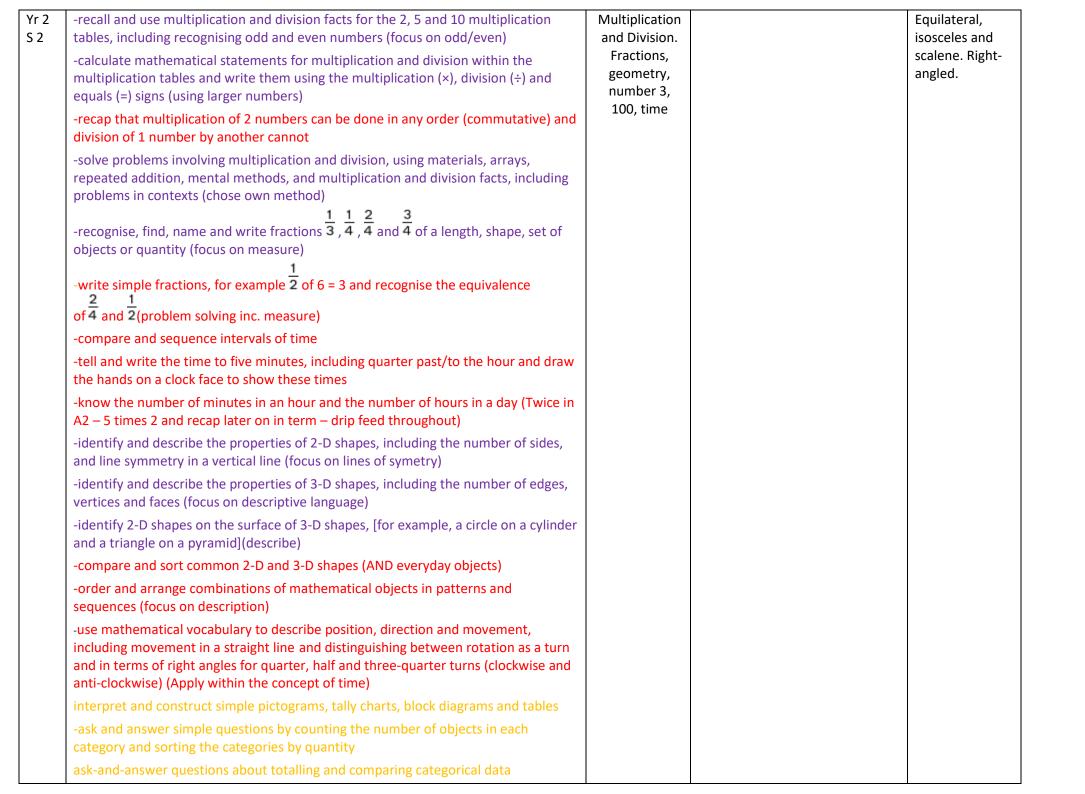|				
			Know by heart all multiplication facts for 5 to 5 x 12 (and warmups) Know by heart all division facts for 5 up to 60 (and warm ups) Know by heart all bonds of multiples of 10 to 100 (and warmups) Florence Nightingale – Mathematician – Data Analyst (links with history	
Yr 2 Sp 2	-recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers (Focus on 5s) -calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs (within measure) -show that multiplication of 2 numbers can be done in any order (commutative) and division of 1 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 (focus on arrays) -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 (including none units / focus on amounts) -write simple fractions, for example $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$	Multiplication and division, fractions and geometry	Unlike division, multiplication can be done in any order Introduce 5 times tables 2, 5, 10 withing multiplication and division Multiply and divide using measure Find ½ ¼ and 2/4 ¾ of objects, groups, measures and amounts Write simple fraction number sentences Properties of 2 and 3d shapes and sort them Lines of symmetry. Know by heart halves of all numbers to twenty (and warmups)	Curved surface, cone, cylinder, sphere. Symmetry
Yr 2 S1	-count in steps of 2, 3, and 5 from 0, and in 10s from any number, forward and backward (scales) -recognise the place value of each digit in a two-digit number (Partition in different ways) -read and write numbers to at least 100 in numerals and in words (focus on writing) • identify, represent and estimate numbers using different representations, including the number line (INVESTIGATION I am thinking of a number…) use place value and number facts to solve problems (measure) Solve problems with addition and subtraction (Applying their increasing knowledge of mental and written methods) recall and use addition and subtraction facts to 20 fluently (derive and use related facts up to 100)	Fractions, Geometry, place value, addition and subtraction, geometry	Partition numbers in different ways. Adding and subtracting 2-digit numbers. Solving word problems, using measure. Reading scales in divisions of 2s, 5s, and tens. Solve 2 step word problems using inverse Division and multiplication and 2s, 5s and 10s. Writing number sentences using x, ÷ and = signs	exchange

add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and 1s, a two-digit number and 10s, 2 two-digit numbers, adding 3 one-digit numbers (crossing 10, making an exchange) -recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems (focus on missing number problems) -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 (In assessment week and end of spring term as well as drip fed) -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 = (spring 2 and drip fed) -identify and describe the properties of 2-D shapes, including the number of sides, and line symmetry in a vertical line (symmetry) -identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces (focus on edges/vertices) -identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid](curved shapes) -compare and sort common 2-D and 3-D shapes (NOT everyday objects) -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)		done in any order and division of one number by another cannot. Solving word problems using measure including money, length, mass and capacity. Finding 1/3 of objects and quantities and measure Compare and sort 2d and 3d shapes Add or subtract any numbers up to 20 (and warmups)	

| Yr 2 S 2 | -recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers (focus on odd/even)

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

-recap that multiplication of 2 numbers can be done in any order (commutative) and division of 1 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 (chose own method)

-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 (focus on measure)

-write simple fractions, for example $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$ (problem solving inc. measure)

-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 (Twice in A2 – 5 times 2 and recap later on in term – drip feed throughout)

-identify and describe the properties of 2-D shapes, including the number of sides, and line symmetry in a vertical line (focus on lines of symetry)

-identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces (focus on descriptive language)

-identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid](describe)

-compare and sort common 2-D and 3-D shapes (AND everyday objects)

-order and arrange combinations of mathematical objects in patterns and sequences (focus on description)

-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) (Apply within the concept of time)

interpret and construct simple pictograms, tally charts, block diagrams and 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 | Multiplication and Division. Fractions, geometry, number 3, 100, time | | Equilateral, isosceles and scalene. Right-angled. |

		National Curriculum objectives	Units covered	Substantive knowledge	Vocabulary
Year 3 A 1		- count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number (focus on 10 more, 10 less) -recognise the place value of each digit in a 3-digit number (100s, 10s, 1s)(focus on recognising and identifying – focus on 10s and 1s) -compare and order numbers up to 1,000 (using < >) -Read and write numbers up to 1,000 in numerals and words (focus on 0-100) -add and subtract numbers mentally, including: a three-digit number and 1s, 10s, 100s (focus on 1s and 10s) add and subtract numbers with up to 3 digits, using formal written methods of column addition and subtraction (focus on addition) -estimate the answer to a calculation and use inverse operations to check answers (when adding 1/10 to a 3d number) -recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables (recap 2, 5, 10 and introduce 3x table) 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(focus on 2, 5, 10) 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 - introduction	Place value and numbers 4 operations	Partitioning 2 digit numbers.10 more and less. Comparing and ordering numbers to 100. Adding and subtracting 1 and 10 mentally. Investigate adding 3 consecutive numbers. Add 2 digit using columns. Single and Multi-step addition problems Division – look at the inverse **3 times table** Know by heart all sums and differences of multiples of 10 up to 100 Know by heart all multiplication facts for 3 to 3 x 12 Know by heart all division facts for 3 up to 36	
Year 3 A 2		-recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators – focus on using concrete objects -recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators – focus on practical /concrete -add and subtract fractions with the same denominator within one whole [for example, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$](practically/concrete) -compare and order unit fractions, and fractions with the same denominators (using <=>) -measure the perimeter of simple 2-D shapes (understand vocabulary and using different measures) -recognise angles as a property of shape or a description of a turn	Fractions and geometry	Recognise fractions as numbers. Unit and non unit fractions Number line work Fractions of shapes presented in different ways ½ ¼ 1/3 Right angles. Mondrian art Archimedes (science link from last half term) – Spiral Mondrian art	Horizontal, vertical, parallel, perpendicular lines, angle, right angle, area, perimeter

	-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			
Year 3 SP 1	- count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number (focus on 100 more, 100 less – within measure/money) -recognise the place value of each digit in a 3-digit number (100s, 10s, 1s)(focus on hundreds and tens) -compare and order numbers up to 1,000 (number sentences) identify, represent and estimate numbers using different representations (focus on Roman Numerals) Read and write numbers up to 1,000 in numerals and words (focus on 0-500) -add and subtract numbers mentally, including: a three-digit number and 1s, 10s, 100s (focus on 10s/100s) add and subtract numbers with up to 3 digits, using formal written methods of column addition and subtraction (focus on subtraction) -estimate the answer to a calculation and use inverse operations to check answers (Use inverse to check when using column addition and subtraction) solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction (focus on missing numbers) recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables (recap 3 and introduce 4x table) 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(focus on 3s and 4s) 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 – focus on missing numbers -measure, compare, add & subtract: lengths (m/cm/mm); mass(kg/g); volume/capacity (l/ml) (focus on measure and compare) -add and subtract amounts of money to give change, using both £ & p in practical contexts	Place value and numbers 4 operations	Place value and partitioning 3 digit numbers, 100 more or less – Roman numerals Comparing and ordering, numerals and words to 1000 Mentally add 3 digit numbers and 1, 10, 100. Subtract using the formal written method, use inverse to check. Multiplication / division facts 3, 4 and 8. **4 times table** 2d x 1d written method. 2d divided 1d written method Know by heart all multiplication facts for 4 to 4 x 12 Know by heart all division facts for 4 up to 48 Add or subtract any single unit, multiple of 10/100 number to any 3 digit HTU number	
Year 3 SP 2	-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 – focus on unit fractions	Fractions and Geometry	Fractions as tenths. Compare and order fractions with the same denominator Fractions of shapes. Equivalent fractions	Obtuse, acute

	-recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators – focus on unit fractions		Fractions of numbers/a set of objects 3D shapes in different orientations. Describe 3D shapes vertices, edges, faces. Right, acute and obtuse angles. Recognise angles as a property of a shape or a description of a turn.	
	-recognise and show, using diagrams, equivalent fractions with small denominators (focus on concrete and pictorial)			
	-add and subtract fractions with the same denominator within one whole [for example, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$](abstract)			
	-compare and order unit fractions, and fractions with the same denominators (abstract)			
	-measure the perimeter of simple 2-D shapes (focus on multi-step questions)			
	-tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks (focus on Roman numerals)			
	-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, am/pm, morning, afternoon, noon and midnight (focus on hours and minutes)			
	-know the number of seconds in a minute and the number of days in each month, year and leap year(focus on minutes and seconds)			
	-compare durations of events [for example, to calculate the time taken by particular events or tasks]			
	-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 (multi-step questions)			
	-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 (focus on greater than, less than right angle, and multi-step problems)			
	Recap horizontal and vertical lines and pairs of perpendicular and parallel lines			
Year 3 S 1	- count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number (focus on counting in multiples of 4, 8, 50 – spot and explain the mistakes)	Place value and numbers 4 operations Fractions	Partitioning, ordering and comparing to 1000. Place value- adding 10, -100, Estimating and Rounding Column addition and subtraction **8 times table** 2d x 1d written method. 2d divided 1d written method Know by heart all multiplication facts for 8 to 8 x 12	
	-recognise the place value of each digit in a 3-digit number (100s, 10s, 1s)(comparing and ordering)			
	-compare and order numbers up to 1,000 (rounding using larger numbers)			
	identify, represent and estimate numbers using different representations (focus on estimating through rounding)			
	Read and write numbers up to 1,000 in numerals and words (focus on 0-1,000)			

	-add and subtract numbers mentally, including: a three-digit number and 1s, 10s, 100s (explain and describe process)		Know by heart all division facts for 8 up to 96	
	add and subtract numbers with up to 3 digits, using formal written methods of column addition and subtraction (explain formal, written method)		Add or subtract any single unit, multiple of 10/100 number to any 3 digit HTU number	
	-estimate the answer to a calculation and use inverse operations to check answers (explain process)			
	solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction (focus on subtraction)			
	recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables (recap 3 and 4 and introduce 8x table)			
	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(focus on 3s, 4s and 8s)			
	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 – focus on scaling problems			
	-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 (number sentences)			
	-recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators – focus on non-unit fractions			
	-measure, compare, add & subtract: lengths (m/cm/mm); mass(kg/g); volume/capacity (l/ml) (focus on add and subtract)			
	-add and subtract amounts of money to give change, using both £ & p in practical contexts (multi step problems)			
Year 3 S 2	-recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators – focus on none unit fractions	Fractions and Geometry	Tenths focus. $1 \div 10$ Count up and down in tenths and go over 10/10 for GD to mixed numbers. Equivalent fractions. Fractions of numbers by dividing Angles review greater or less than a right angle. Include statistics – sorting and graphing shapes. Symmetry	
	-recognise and show, using diagrams, equivalent fractions with small denominators (focus on abstract)			
	-add and subtract fractions with the same denominator within one whole [for example, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$](with larger numbers)			
	-compare and order unit fractions, and fractions with the same denominators (with larger numbers)			
	-tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks (focus on 12 – 24 hour clock)			

	-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, am/pm, morning, afternoon, noon and midnight (focus on minutes and seconds) -know the number of seconds in a minute and the number of days in each month, year and leap year(focus on numbers of days in month / year) -compare durations of events [for example, to calculate the time taken by particular events or tasks](within calculations) -draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them (description) -recognise angles as a property of shape or a description of a turn (spot the mistakes) -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 (focus on whether angles are greater or less than a right angle) -interpret and present data using bar charts, pictograms and tables (throughout and X-curricular) -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 (throughout and X-curricular)				
	National Curriculum objectives	**Units covered**	**Substantive knowledge**	**Vocabulary**	
Year 4 Autumn 1	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 (focus on 1,000 – challenge beyond) Rounding to the nearest 10, 100 and 1000.(focus on 10/100) Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate (Without making an exchange) Estimate and use inverse operations to check answers to a calculation (throughout) Recall multiplication and division facts for multiplication tables up to 12 × 12 (focus on 2, 7, 6, 8, 9) Multiply two-digit and three-digit numbers by a one-digit number using formal written layout (focus on 2 digits)	Place value and numbers, addition and subtraction (bit of fractions – change next year), multiplication and division	Recognising the 4 mathematical equation symbols and language. To read and interrupt a multiplication square. Rounding to the nearest 10. Order and compare 2 and 3 digit numbers. Adding 3 and 4 digit numbers using the formal method (carrying below). Estimate and use inverse operations to check answers to calculations (to the nearest 10). Add and subtract fractions with the same denominator.	denominator	

	Add and subtract fractions with the same denominator (in relation to addition and subtraction)		Multiplying 3 numbers together. Recognise and use factor pairs and commutativity in mental calculations. Multiply 2 digit numbers by 1 digit numbers. Know by heart all multiplication facts for 6 to 6 x 12 Know by heart all division facts for 6 up to 72 Know by heart all multiplication facts for 9 to 9 x 12 Know by heart all division facts for 9 up to 108 Know by heart all multiplication facts for 7 to 7 x 12 Know by heart all division facts for 7 up to 84 Round a number to the nearest 10, 100, 1000	
Year 4 Autumn 2	Recall multiplication and division facts for multiplication tables up to 12 × 12 (focus on division) Recognise and show, using diagrams, families of common equivalent fractions -measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres -find the area of rectilinear shapes by counting squares Estimate, compare and calculate different measures, including money in pounds and pence – focus on money Complete a simple symmetric figure with respect to a specific line of symmetry. Identify lines of symmetry in 2-D shapes represented in different orientations.	Multiplication fractions, geometry	Division facts 1 digit by 1 digit / division of 2 digit by 1 digit. Bus stop method introduced. (No exchanging needed). Measure and money fractions and decimals to two dp. Families of common equivalent fractions. Order fractions. Add/ subtract fractions with different denominators. Lines of symmetry in 2-D shapes. Convert between different units of measure. Calculate perimeter. Compare and classify quadrantals based on their size and properties.	Parallel lines Clockwise Perpendicular lines Anti-clockwise Horizontal lines Acute Diagonal lines Obtuse quadrilateral
Year 4 Spring 1	Count in multiples of 6, 7, 9, 25 and 1,000 (focus on 1,000 and 25) 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)(Focus on larger numbers and different ways of partitioning – eg, 12 hundreds…) Identify, represent and estimate numbers using different representations. (Concrete, pictorial)	Place value and numbers. Multiplication and division Word problems	Rounding to the nearest 10 - 100 - 1000. Compare numbers with the same number of decimal places up to two decimal places. Negative numbers - counting backwards. Multiply/ dividing by 10/100. Roman numerals to 100.	

	Rounding to the nearest 10, 100 and 1000.(focus on 100/1000) Read Roman numerals to 100 Recall multiplication and division facts for multiplication tables up to 12 × 12 (focus on 3, 4, 7, 8, 9, 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 (Focus on mental strategies) 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 (Focus on 3 digits) 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 (Focus on multiplying 2 digits by 1 digit) 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 (multi-step questions) -find the area of rectilinear shapes by counting squares (within calculations) 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 (focus on hours to minutes and minutes to seconds) 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 (compare focus) Describe positions on a 2-D grid as coordinates in the first quadrant (understand the positions and describe them) 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		Place value of a 4 digit number. TT week - Focus on: 3,4,7,8,9,12 Looking for patterns to recall timetables. Multiplying by 0 or 1 and understanding the relationships on numbers. - Multiplying 3 numbers together. Recognise and use factor pairs and commutativity in mental calculations. Know by heart all multiplication facts for 11 to 11 x 12 Know by heart all division facts for 11 up to 132 Y4 Know by heart all multiplication facts for 12 to 12 x 12 Know by heart all division facts for 12 up to 144 Round a number to the nearest 10, 100, 1000 Know number bonds to 100	
Year 4 Sprin g 2	Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate (Making an exchange) Estimate and use inverse operations to check answers to a calculation (throughout) Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why	Addition and subtraction, fractions and geometry	Estimate and use inverse operations to check answers to calculations (to the nearest 100). Add 3 an 4 digit numbers (carrying below). Recognise families of common equivalent fractions. Write	rectilinear

	Recognise and show, using diagrams, families of common equivalent fractions (explain and describe – spot the mistakes)		equivalent to quarter, half, and three quarters. Measure and money problems involving fractions and decimals to two decimal places.	
	Count up and down in hundredths; recognise that hundredths arise when dividing an object by 100 and dividing tenths by 10		Recognise and write decimals of any number of tenths. Investigate dividing a one or two digit number by 10 and 100.	
	Recognise and write decimal equivalents of any number of tenths or hundreds (focus on recognition of tenths and hundreds)		Rectilinear figures and calculating area.	
	Recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ - (Focus on ¼ and ½)		Compare acute/obtuse angles and order angles up to two right angles by size.	
	-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 (Focus on 1 digit)		David Hilbert – Hilbert's problems https://nrich.maths.org/2496 Hilbert's Problems -- from Wolfram MathWorld	
	Round decimals with 1 decimal place to the nearest whole number			
	Read, write and convert time between analogue and digital 12- and 24-hour clocks (apply within calculations)			
	Solve problems involving converting from hours to minutes, minutes to seconds, years to months, weeks to days (focus on years to months, weeks to days)			
	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			
Year 4 Summer 1	Count in multiples of 6, 7, 9, 25 and 1,000 (focus on 6, 7, 9)	Place value and numbers, fractions, multiplication and division	Round to the nearest 10, 100 and 1000.	
	Find 1,000 more or less than a given number (Find 1000, 100, 10 =, 1 less than given number)		Order and compare numbers beyond 1000, using symbols.	
	Count backwards through 0 to include negative numbers (be able to calculate within negative numbers)		Round decimals with one decimal place to the nearest whole number.	
	Order and compare numbers beyond 1,000 (Use symbols)		Adding/subtracting fractions with the same/different denominator.	
	Identify, represent and estimate numbers using different representations. (Pictorial, abstract)		Compare numbers with the same number of decimal places by 2 decimal places.	
	Rounding to the nearest 10, 100 and 1000.(find and explain the mistake)		Round decimals with one decimal place to the nearest whole number.	
	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		Division of 3 digit by 1 digit. Bus stop method introduced. (No exchanging/exchange).	
	Recall multiplication and division facts for multiplication tables up to 12 × 12 (explain the mistakes)		Round a number to the nearest 10, 100, 1000	
	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 (Focus on multiplying 3 numbers)			
	Recognise and use factor pairs and commutativity in mental calculations (with larger numbers and more difficult problems)			

	Multiply two-digit and three-digit numbers by a one-digit number using formal written layout (Using larger numbers and explain method)		Know number bonds to 100	
	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 (focus on interger scaling problems and n being connected to m problems)			
	Count up and down in hundredths; recognise that hundredths arise when dividing an object by 100 and dividing tenths by 10 (multi-step questions)			
	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(explain the mistake)			
	Recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ - (Focus on ¾ and problems) -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 (Focus on 2 digit)			
	Round decimals with 1 decimal place to the nearest whole number (spot the mistakes)			
	Compare numbers with the same number of decimal places by 2 decimal places. solve simple measure and money problems involving fractions and decimals to 2 decimal places			
Year 4 Summer 2	Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate (Use larger numbers and explain method)	Addition and subtraction, geometry	Estimate and use inverse operations to check answers to calculations (to the nearest 10, 100, 1000). Subtract 3 and 4 digit numbers carrying below). **Multiplication Check Test** Reading/understanding graphs. X and y axis. Geometry: quadrilaterals and triangles with x and y axis, with skill of translation. Rectilinear figures, checking area and perimeter knowledge. Ada Lovelace – Computer programmer – link with Science	Quadrilateral, translation axis
	Estimate and use inverse operations to check answers to a calculation (throughout)			
	Solve addition and subtraction two-step problems in contexts (Focus on deciding which operations and methods to use and why)			
	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 (application – investigations)			
	Recognise and write decimal equivalents of any number of tenths or hundreds (focus on writing decimal equivalents)			
	Compare numbers with the same number of decimal places by 2 decimal places.(explain the mistake) solve simple measure and money problems involving fractions and decimals to 2 decimal places (application in different contexts)			
	Convert between different units of measure [for example, kilometre to metre; hour to minute] (within calculations)			

	Estimate, compare and calculate different measures, including money in pounds and pence (focus on a range of measures – not money) Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes – explain reasoning Identify acute and obtuse angles and compare and order angles up to 2 right angles by size (focus on ordering) Complete a simple symmetric figure with respect to a specific line of symmetry. Identify lines of symmetry in 2-D shapes represented in different orientations. (focus on different orientations) Describe positions on a 2-D grid as coordinates in the first quadrant (focus on description and plot their own) Describe movements between positions as translations of a given unit to the left/right and up/down – spot the mistakes Plot specified points and draw sides to complete a given polygon-spot the mistake			
	National Curriculum objectives	**Units covered**	**Substantive knowledge**	**Vocabulary**
Yr 5 A1	-round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000 (Focus up to 10, 000) -solve number problems and practical problems within place value objectives – (throughout) -add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) -use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy (use rounding and inverse) -solve addition and subtraction multi-step problems identify multiples and factors, finding all factor pairs of a number, and common factors of 2 numbers -know and use the vocabulary of prime numbers and composite (non-prime) numbers (not prime factors) -establish whether a number up to 100 is prime and recall prime numbers up to 19 (only here) -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 (1 digit) -multiply and divide numbers mentally, drawing upon known facts -Divide numbers up to 4 digits by a one-digit number (not using the formal written method of short division and interpret remainders appropriately for the context)	Place value and number, 4 operations	- Read, write, order, compare numbers to 10,000 - Round any number up to 10,000 to nearest 10,100 1000. Round numbers 1 decimal place to nearest whole. - Add / subtract whole numbers with 4 digits.- Add/ subtract numbers mentally.- Use rounding to check answers - Identify multiples and factors. Find all factor pairs of a number and common facts of 2 numbers. Use vocab of prime numbers and composite numbers. Establish whether a number up to 100 is prime. - Recall prime numbers up to 19- Multiply numbers up to 4 digits by 1 digit number - Multiply and divide numbers mentally Divide numbers up to 4 digits by 1 digit number - Multiply/ divide whole numbers and decimals by 10. - Convert between different units of	Order, compare, round, decimal, tens, hundreds, thousands, equal, numeral, digit, value Column, exchange, increase, decrease, mentally, rounding, estimate, Form al, column, multiplication, division, decimals, decimal, square, convert, measure, units, centimetre, millimetre, digit, factors, multiple, prime,

	-multiply and divide whole numbers and those involving decimals by 10, (not 100 and 1,000) -recognise and use square numbers and cube numbers, and the notation for squared (²) and cubed (³) (not cubed)		measure (those involving 10 e.g. cm/mm) - Recognise and use square numbers. Pythagoras and Prime numbers Double any 2 digit number Halve any 2 digit number Know the factors of all times table answers up to 12 x 12 Know by heart the squares of numbers between 1 and 12 and squares of multiples of 10	composite, common
Yr 5 A2	Compare and order fractions whose denominators are all multiples of same number. -identify, name and write equivalent fractions of a given fraction, represented visually, -add and subtract fractions with the same denominator, and denominators that are multiples of the same number -read and write decimal numbers as fractions [for example, $0.71 = \frac{71}{100}$] -measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres -know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles (identify and compare) -draw given angles, and measure them in degrees (°) (acute focus) -identify angles at a point on a straight line and half a turn (total 180°) -use the properties of rectangles to deduce related facts and find missing lengths and angles -solve comparison, sum and difference problems using information presented in a line graph -complete, read and interpret information in tables, including timetables	Fractions and geometry Statistics	- Identify, name and write equivalent fractions – Compare/ order fractions with different denominators. Add/subtract fractions with same denominator and denominators that are multiples. – Read write decimals as fractions.- Measure and calculate perimeter of composite rectilinear shapes - Identify and compare angles (acute, obtuse, reflex) - Identify angles on a straight line - Estimate acute angles. - Measure and draw acute angles. - Use the properties of rectangles to deduce related facts.	Equivalent, half, quarter, denominator, multiple, fraction, decimal, tenth Calculate, measure, perimeter, angle rectangle, acute, rectilinear, obtuse, reflex, protractor,
Yr 5 Sp1	-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 (multiple of 10) - Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through 0 -round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000 (focus up to 100,000)	Place value and number, 4 operations	- Read and write, order/ compare numbers to 1,000,000. Interpret negative numbers. Round any number up to 1,000,000 to the nearest 10,100 1000. - Round decimals with 2 decimal places to the nearest whole and 1 dp. Add / subtract whole numbers with up to 6 digits	Order, compare, round, decimal, tens, hundreds, thousands, equal, negative, interpret, million, whole Column, exchange,

	-solve number problems and practical problems within place value objectives – In every lesson -add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)(money and measures) -add and subtract numbers mentally -use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy (multi step problems) - solve addition and subtraction multi-step problems (using measures) identify multiples and factors, finding all factor pairs of a number, and common factors of 2 numbers (find and explain the mistake) - Know and use the vocabulary of prime numbers and prime factors (briefly recap composite) -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 (2 digit – up to 2d x 4d) -multiply and divide numbers mentally, drawing upon known facts (include measures and money) -Divide numbers up to 4 digits by a one-digit number and interpret remainders (not using the formal written method of short division) -multiply and divide whole numbers and those involving decimals by 100 (recap 10, not yet 1,000) -recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})(focus on cubed) -convert between different units of metric measure [for example, kilometre and metre; centimetre and metre; centimetre and millimetre; -understand and use approximate equivalences between metric units and common imperial units such as inches.		(money/real life application & problem solving) – Add/ subtract numbers mentally. - Multiply numbers up to 4 digits by a two digit number (up to 4d x 2d) - Divide numbers up to 4 digits by a one digit number and interpret remainders. - Multiply and divide whole numbers and decimals by 100. Convert between different units of measure (those involving 100 e.g. mm/m) - Find the area of rectangles (recognise and use square number). - Recognise and use cube numbers. Multiply or divide a number by 10, 100, 1000 including decimals Know number bonds to 100 for numbers with one decimal place Recall prime numbers up to 30	increase, decrease, mentally, rounding, estimate, check, context Formal, column, multiplication, division, remain der, decimals, decimal, square, cube, convert, measure, units, metre, millimetre, digit, factors, multiple, prime, composite, common
Yr 5 Sp2	Compare and order fractions whose denominators are all multiples of same number, (and different denominators). -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 -add and subtract fractions with the same denominator, and denominators that are multiples of the same number (up to 3 fractions)	Fractions and geometry	-- Identify, name, write equivalent fractions – Compare/ order fractions with different denominators. - Recognise and convert between mixed numbers and improper fractions Add and subtract up to 3 fractions with same denominator and denominators that are multiples. - Add/subtract mixed number	Equivalent, half, quarter, denominator, multiple, fraction, decimal, multiply, proper, improper, mixed number,

	-multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams (focus on improper fractions) -read and write decimal numbers as fractions [for example, $0.71 = \frac{71}{100}$](tens, hundredths, thousandths) -recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents -round decimals with 2 decimal places to the nearest whole number and to 1 decimal place -read, write, order and compare numbers with up to 3 decimal places (not compare) -recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per 100' calculate and compare the area of rectangles (including squares), including using standard units, square centimetres (cm²) and square metres (m²), and (not estimating the area of irregular shapes) -estimate volume [for example, using 1 cm³ blocks to build cuboids (including cubes)] and capacity [for example, using water] -Convert between units of time -know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles (focus on estimation) -draw given angles, and measure them in degrees (°) (obtuse and reflex focus) - identify angles at a point and 1 whole turn (total 360°) -Identify other multiples of 90° -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 solve comparison, sum and difference problems using information presented in a line graph (and in science – explain and describe findings) complete, read and interpret information in tables, including timetables (and in science – explain and describe findings)		fractions. write decimals as fractions – tenths/ hundredths/ thousandths - Multiply proper fractions by whole numbers - Estimate obtuse angles.- Measure/ draw obtuse angles. - Find missing lengths of shapes. - Identify, describe, position of shapes following reflection / translation.	tenths, hundredths, thousandths Calculate, measure, perimeter, angle rectangle, acute, rectilinear, obtuse, reflex, protractor, reflection, translation, quadrant
Yr5 S1	-read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit (focus on comparison) count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000 (any number not a multiple of 10) - Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through 0 (through calculations)	Place value and number, 4 operations	- Add/subtract whole numbers with more than 4 digits - Add/subtract numbers mentally with increasingly large numbers - Use rounding to check answers - Solve addition and subtractions multi-step problems - Multiply numbers up to 4 digits by a two-	

	-solve number problems and practical problems within place value objectives – In every lesson with increasing confidence - Read Roman Numerals to 1000 (M) and recognise years written in Roman numerals. -add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)(with larger numbers, multi step questions – explain method) 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 (spot and explain mistakes) -solve addition and subtraction multi-step problems in contexts (explaining WHY methods have been chosen) -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 (formal written method focus) -multiply and divide numbers mentally, drawing upon known facts - Divide numbers up to 4 digits by a one-digit number and interpret remainders (using the formal written method of short division – focus on remainders/ decimals) -multiply and divide whole numbers and those involving decimals by 1,000 (briefly recap 10, 100) -solve problems involving multiplication and division, including using their knowledge of factors and multiples, squares and cubes (but problem solving throughout) -solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign (here explicitly but taught throughout) -solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates (here explicitly but taught throughout) -convert between different units of metric measure [gram and kilogram; litre and millilitre] (including calculations) understand and use approximate equivalences between metric units and common imperial units such as pounds and pints (including calculations) -use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling (throughout)		digit numbers. Multiply/ divide numbers mentally. Divide numbers up to 4 digits by a one-digit number and interpret remainders. Multiply/divide whole numbers and decimals by 1000. - Convert between different units of measure (those involving 1000 e.g. km/m, g/kg, l/ml) Carl Friedrich Gauss Finding patterns in number https://nrich.maths.org/2478 Multiply pairs of multiples of 10 and 100 e.g. 30 x 70	
Yr5 S2	- Recap Roman Numerals to 1000 (M) and recognise years written in Roman numerals (within calculations)	Fractions and geometry	- Recognise/ convert between mixed numbers and improper fractions. Add/ subtract up to 3 fractions with same denominator	

-identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths (Including decimal equivalents) -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 (up to 3 fractions and mixed number fractions) -multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams (focus on multiplying mixed number fractions) -recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents (within measure and calculations) -round decimals with 2 decimal places to the nearest whole number and to 1 decimal place (within measures) -read, write, order and compare numbers with up to 3 decimal places (focus on comparing) -recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per 100', and write percentages as a fraction with denominator 100, and as a decimal fraction -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 -measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres (multi step questions / spot the mistake) calculate and compare the area of rectangles (including squares), including using standard units, square centimetres (cm²) and square metres (m²), and (including estimating the area of irregular shapes) -estimate volume [for example, using 1 cm³ blocks to build cuboids (including cubes)] and capacity [for example, using water](multi-step problems) -solve problems involving converting between units of time -use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling (throughout – and investigations) -identify 3-D shapes, including cubes and other cuboids, from 2-D representations – also through investigation -use the properties of rectangles to deduce related facts and find missing lengths and angles (investigation) -distinguish between regular and irregular polygons based on reasoning about equal sides and angles		and denominators that are multiples. Add/subtract mixed number fractions. Multiply proper fractions by whole numbers. Multiplying mixed number fractions. Finding fractions of amounts. Recognise the % symbol. Write percentages as a fraction. Solve problems which require decimal/percentage equivalents (e.g. ½ 50% ¼ 25% 1/5 20% 2/5)- Identify 3D shapes, including cubes and cuboids from 2D shapes (nets) Distinguish between regular and irregular polygons based on information about angles and sides. Solve problems using information in line graphs. Complete, interpret and read information in tables. - Identify, describe, represent position of shapes following reflection/ translation. Alan Turing – link with WW2	

		National Curriculum objectives	Units covered	Substantive knowledge	Vocabulary
		-Recap representing the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed			
Year 6 Autumn 1		Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit – within problems Round any whole number to a required degree of accuracy -within problems Use negative numbers in context, and calculate intervals across 0-within problems 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 Identify common factors, common multiples and prime numbers Algebra throughout - use simple formulae, generate and describe linear number sequences, express missing number problems algebraically, find pairs of numbers that satisfy an equation with 2 unknowns, enumerate possibilities of combinations of 2 variables	Place value and numbers, 4 operations within measure Algebra	Pupils can read/write/partition/represent numbers to 10,000,000 (numeral/words). -Pupils can round numbers to the nearest 10,100 and 1,000. Apply rounding knowledge to round integers. Count forwards/ backwords- cross into negative numbers/temperature/money Apply addition/subtraction to multi-step problems- column method. Use rounding, estimation, inverse operations to solve addition/subtraction problems. Algebraic links used throughout. Identify factors, common factors, prime numbers. Multiply/divide 3/4-digit by 1and 2-digit Double any number with up to 1 decimal place	
Year 6 Autumn 2		Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication 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 Convert between miles and kilometres	Fractions, geometry/Me asure, place value and numbers / decimals	Simplify fractions by using common factor knowledge. Find equivalent fractions using common factors/multiples Convert/order/compare fractions- mixed number improper fractions. Add/subtract fractions with different denominators. Add/subtract/multiply/divide mixed fractions. Multiply by 10,100 and 1000 to convert measures. Convert between miles	Compound Column Parallelogram

			/ km when given the required ratio. Calculate area/perimeter of a shape inc. compound shapes. Calculate, estimate, compare volumes of cubes/cuboids. identify the value of decimals up to 3 decimal places. Order/compare decimals up to 3 decimal places. Round decimal numbers to any degree of accuracy. Find a unit fraction of a number Identify equivalence between fractions Find non-unit fractions of a number Find a percentage of a number Convert between decimals fractions and percentages Convert improper fractions to mixed number	
Year 6 Spring 1	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 Perform mental calculations, including with mixed operations and large numbers Use their knowledge of the order of operations to carry out calculations involving the 4 operations (BODMAS) 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 Compare and order fractions, including fractions >1 (of amounts – within measure) Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions (within measure) -Pupils can multiply simple pairs of fractions. multiply simple pairs of proper fractions, writing the answer in its simplest form eg, $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$] -pupils can divide proper fractions by whole numbers. [for example, $\frac{1}{3} \div 2 = \frac{1}{6}$]	All 4 operations, fractions and percentage Algebra	Add/subtract using decimals inc. integers. Multiply decimals by whole numbers. Divide using short division- remainders as decimals /fractions. Identify the order of operations (BODMAS) generate and describe linear number sequences. Convert between fractions, decimals and percentages. Order and compare. fractions, decimals and percentages. Find percentages of amounts. -Solve problems involving fractions/ percentages division and multiplication scale factors, ratio, proportion, fractions, decimals, percentages. Double any number with up to 1 decimal place	

	-associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $\frac{3}{8}$] Identify the value of each digit in numbers given to 3 decimal places and multiply and divide numbers by 10, 100 and 1,000 giving answers up to 3 decimal places Solve problems which require answers to be rounded to specified degrees of accuracy Multiply one-digit numbers with up to 2 decimal places by whole numbers Use written division methods in cases where the answer has up to 2 decimal places Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts Solve problems involving the relative sizes of 2 quantities where missing values can be found by using integer multiplication and division facts Solve problems involving similar shapes where the scale factor is known or can be found Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples Algebra throughout - use simple formulae, generate and describe linear number sequences, express missing number problems algebraically, find pairs of numbers that satisfy an equation with 2 unknowns, enumerate possibilities of combinations of 2 variables (embed)		Find a unit fraction of a number Identify equivalence between fractions Find non-unit fractions of a number Find a percentage of a number Convert between decimals fractions and percentages Convert improper fractions to mixed number	
Year 6 Spring 2	Solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 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 3 decimal places – Including Time **Geometry** Draw 2-D shapes using given dimensions and angles Recognise, describe and build simple 3-D shapes, including making nets Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles Describe positions on the full coordinate grid (all 4 quadrants)	Geometry, Measure and statistics	Types of angles / measuring angles using a protractor. Calculate angles on a straight line/around a point/vertically opposite. Find missing angles within triangles/quadrilaterals/regular polygons. -Describe positions on a co-ordinates grid. Translate shapes and points on a co-ordinates grid. Reflect shapes and points on a co-ordinates grid. pupils interpret pie charts, line graphs. Calculate and interpret mean. Pythagoras (angles) Descartes (coordinates)	Four quadrants

	Draw and translate simple shapes on the coordinate plane, and reflect them in the axes Interpret and construct pie charts and line graphs and use these to solve problems Calculate and interpret the mean as an average			
Year 6 Summer 1	-Pupils can multiply simple pairs of fractions. multiply simple pairs of proper fractions, writing the answer in its simplest form eg, $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$] (within larger numbers and increasing difficulty) -pupils can divide proper fractions by whole numbers. [for example, $\frac{1}{3} \div 2 = \frac{1}{6}$] (within different contexts – multi-step problems) -associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $\frac{3}{8}$] (within larger numbers and increasing difficulty) Identify the value of each digit in numbers given to 3 decimal places and multiply and divide numbers by 10, 100 and 1,000 giving answers up to 3 decimal places (increasing numbers and difficulty) Solve problems which require answers to be rounded to specified degrees of accuracy Multiply one-digit numbers with up to 2 decimal places by whole numbers (within different contexts inc. measure) Recognise that shapes with the same areas can have different perimeters and vice versa Recognise when it is possible to use formulae for area and volume of shapes Calculate the area of parallelograms and triangles Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³), and extending to other units [for example, mm³ and km³]	Fractions	Revision areas to be chosen from spring tests. Areas that need covering will be revised before the summer assessments in May Emily Noether	

Year 6 Summer 2

Leave a legacy

Pupils use knowledge from the year to create a business to raise money for a charity/end of year prom. -pupils use knowledge of statistics, four operations, averages, fractions, decimals and percentages to show business strategy and represent key data from their work.

-pupils create maths games to help support the learning of others in different year groups.

Fibonacci – sequence / leaning tower of Pisa