Whipton Barton Federation Maths Long-Term Curriculum Map

At Whipton Barton Federation, our aim is to deepen children's understanding of Maths and not accelerate through learning; as a result, our children develop fluency before moving onto reasoning and problem solving. Our teaching is richly supported by the use of pictorial and concrete resources throughout all year groups, before moving to the abstract. Children will draw on all three of aspects throughout their time in primary school. We value the microscopic gains pupils make in Maths and, therefore believe offering opportunities for all pupils to deliberately practise their fluency is vitally important and this is a key feature of every one of our lessons.

Throughout each year, children will cover and build on their understanding in: knowing and using numbers, addition and subtraction, multiplication and division, using fractions, understanding the properties of shape, describing position, direction and movement, using measures, using statistics and using algebra.

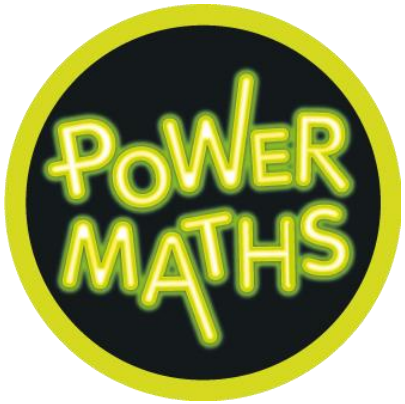
Once they have a firm grasp of each mathematical technique, we challenge our pupils to use what they have learnt and to make rich connections across the distinct areas in order to solve problems. We believe it is important for children to be able not only to find the answers to problems but also to be able to explain the reasoning behind their lines of enquiry using accurate mathematical vocabulary. Children will be regularly told 'the answer is just the beginning'! By celebrating learning and through engaging challenges, we inspire our pupils to increase their fluency in maths and to become increasingly sophisticated problem solvers, both in Maths and across the curriculum.

Teachers plan professionally sculpted lessons according to the needs of each class.

Throughout their time at Whipton Barton Federation, our pupils learn the following essential characteristics of mathematics:

- An understanding of the important concepts and an ability to make connections within mathematics;
- A broad range of skills in using and applying mathematics;
- Fluent knowledge and recall of number facts and the number system;
- The ability to show initiative in solving problems in a wide range of contexts, including the new or unusual;

- The ability to think independently and to persevere when faced with challenges;
- To embrace the value of learning from mistakes and false starts;
- The ability to reason, generalise and make sense of solutions;
- Fluency in performing written and mental calculations and mathematical techniques;
- A wide range of mathematical vocabulary;
- A commitment to and enthusiasm in the subject.
- Broadly the children will learn the following in each year group:



Year 1 - children will explore numbers to 100, identifying and representing those using objects and pictorial representations. Children will look at basic fractions, shapes and measurements, applying their new knowledge to the world around them.

Year 2 - children will use place value and number facts to solve problems using addition and subtraction, recall and use multiplication and division facts, recognise a variety of fractions and shapes and use measurement.

Year 3 - children will count in varying difficulties of multiples, fractions, develop their time telling, use Roman Numerals and interpret data using varying charts.

Year 4 - children will solve number and practical problems, use formal addition and subtraction methods, solve multiplication problems, continue working on fraction knowledge, convert between units of measurement, classify geometric shapes and look at translation of shapes.

Year 5 - work with numbers to at least 1,000,000, use the formal method with increasingly formal written methods, use rounding to check answers, identify prime and square numbers, compare and order fractions, convert between measurements, identify and problem solve with missing angles and interpret information in tables.

Year 6 - use rounding to compare numbers, determine the value of digits up to 8 digits, use wider knowledge to solve fraction problems, use formal multiplication methods, solve problems involving relative size, ratio and proportion, calculate missing numbers, master properties of shapes, describe positions on the full coordinate grid and interpret and construct pie charts and line graphs.

Parents/Carers can find out more about what area of Maths that their child is learning about weekly on the Home Learning letter.

Year	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Reception	**Numbers to 5** Counting to 1, 2 and 3 Counting to 4 Counting to 5 Early Learning Goal To have a deep understanding of number to 10, including composition of each number. To subitise up to 5. To recognise the pattern of the counting system **Comparing groups within 5** Comparing quantities of identical objects Comparing quantities of non-identical objects	**Change within 5** One more One less Early Learning Goal To compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity. **Number bonds within 5** Introducing the part-whole model Early Learning Goal To have a deep understanding of number to 10, including	**Numbers to 10** Counting to 6, 7 and 8 Counting to 9 and 10 Early Learning Goal To have a deep understanding of number to 10, including composition of each number. To subitise up to 5. To verbally count (recognising the pattern of the counting system). **Comparing numbers within 10** Comparing groups up to 10 Early Learning Goal	**Number bonds to 10** Using a ten frame The part-whole model to 10 Early Learning Goal To have a deep understanding of number to 10, including composition of each number. To subitise up to 5. To automatically recall number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts. **Subtraction** Subtraction	**Counting on and counting back** Adding by counting on Taking away by counting back Early Learning Goal To have a deep understanding of number to 10, including composition of each number. **Numbers to 20** Counting to and from 20 Early Learning Goal To verbally count beyond 20, recognising the pattern of the counting system.	**Shape** Composing and decomposing shapes (This unit supports the Development Matters statement: Select, rotate and manipulate shapes in order to develop spatial reasoning.) **Measure** Volume and capacity Early Learning Goal To compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or

	Early Learning Goal To compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity. To subitise up to 5. **Shape** 3D shapes 2D shapes (This unit supports the Development Matters statement: Select, rotate and manipulate shapes in order to develop spatial reasoning.)	composition of each number. To automatically recall number bonds up to 5 and some number bonds to 10, including double facts. **Space** Spatial Awareness (This unit supports the Development Matters statement: Select, rotate and manipulate shapes in order to develop spatial reasoning.)	To have a deep understanding of number to 10, including composition of each number. To compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity. To subitise up to 5. **Addition to 10** Combing 2 groups to find the whole Early Learning Goal To have a deep understanding of number to 10, including the composition of each number. To subitise (recognise quantities without counting) up to 5. To automatically recall number bonds up to 5 (including subtraction facts) and some number	Early Learning Goal To have a deep understanding of number to 10, including composition of each number. **Exploring patterns** Making simple patterns Exploring more complex patterns (This unit supports the Development Matters statement: Continue, copy and create repeating patterns.)	**Numerical patterns** Doubling Halving Odds and evens Early Learning Goal To explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.	the same as the other quantity. **Sorting** Sorting into 2 groups (This unit provides an introduction to the concept of sorting, which will be useful in Year 1.) **Time** My day (This unit provides an introduction to time, which will be covered in Year 1.)

			bonds to 10, including double facts. To compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity. **Measure** Length, height and distance Weight Early Learning Goal To compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity.			
Year 1	**Numbers to 10** Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to,	**Addition and subtraction within 10 (2)** Represent and use number bonds and related subtraction facts within 20. Solve one-step problems that involve addition,	**Addition within 20** Add and subtract one-digit and two-digit numbers to 20, including zero. Represent and use number bonds and	**Introducing length and height** Compare, describe and solve practical problems for lengths and heights e.g. long/short, longer/shorter, tall/short, double/half.	**Multiplication** Count, read and write numbers to 100 in numerals; count in multiples of 2, 5 and 10. Solve one-step problems involving multiplication by calculating the answer using concrete	**Numbers to 100** Count, read and write numbers to 100 in numerals; count in multiples of 2, 5 and 10. Identify and represent numbers using objects and pictorial representations

	more than, less than (fewer), most, least. Identify one more and one less of a given number. Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. Count, read and write numbers to 100 in numerals; count in multiples of 2, 5 and 10. Read and write numbers from 1 to 20 in numerals and words. **Part-whole within 10** Represent and use number bonds and related subtraction facts within 20. Read and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs. **Addition and subtraction within 10 (1)**	subtraction and missing numbers using concrete objects and pictorial representations. Read and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs. Add and subtract one-digit and two-digit numbers to 20, including zero. **2D and 3D shapes** Recognise and name common 2-D shapes e.g. rectangles (including squares), circles and triangles. Recognise and name common 3-D shapes e.g. cuboids (including cubes), pyramids and spheres. Recognise and create repeating patterns with objects and with shapes.	related subtraction facts within 20. Solve one-step problems that involve addition, subtraction and missing numbers using concrete objects and pictorial representations. **Subtraction within 20** Add and subtract one-digit and two-digit numbers to 20, including zero. Represent and use number bonds and related subtraction facts within 20. Solve one-step problems that involve addition, subtraction and missing numbers using concrete objects and pictorial representations. Read and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs. **Numbers to 50**	Measure and begin to record length/height. Solve one-step problems that involve addition, subtraction and missing numbers using concrete objects and pictorial representations. **Introducing weight and volume** Compare, describe and solve practical problems for mass/weight e.g. heavy/light, heavier than, lighter than. Measure and begin to record mass/weight. Compare, describe and solve practical problems for capacity and volume e.g. full/empty, more than, less than, half, half full, quarter. Measure and begin to record capacity and volume.	objects, pictorial representations and arrays with the support of the teacher. **Division** Solve one-step problems involving division by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher. **Halves and quarters** 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. **Position and direction** Describe position, direction and movement, including whole, half, quarter and three-quarter turns.	including the number line, and use the language of: equal to, more than, less than (fewer), most, least. Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. Identify one more and one less of a given number. Recognise the place value of each digit in a two-digit number (tens, ones). Represent and use number bonds and related subtraction facts within 20. **Time** Sequence events in chronological order using language e.g. before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening.

	Represent and use number bonds and related subtraction facts within 20. Read and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs. Solve one-step problems that involve addition, subtraction and missing numbers using concrete objects and pictorial representations.	**Numbers to 20** 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 to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. Identify one more and one less of a given number. Recognise the place value of each digit in a two-digit number (tens, ones). Compare and order numbers from 0 up to 100; use <, > and = signs.	Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. 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. Recognise the place value of each digit in a two-digit number (tens, ones). Identify one more and one less of a given number. Solve one-step problems that involve addition, subtraction and missing numbers using concrete objects and pictorial representations. Count, read and write numbers to 100 in numerals; count in multiples of 2, 5 and 10.	Solve one-step problems that involve addition, subtraction and missing numbers using concrete objects and pictorial representations.		Compare, describe and solve practical problems for time e.g. quicker, slower, earlier, later. Measure and begin to record time (hours, minutes, seconds). Recognise and use language relating to dates, including days of the week, weeks, months and years. Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. Solve one-step problems that involve addition, subtraction and missing numbers using concrete objects and pictorial representations. **Money** Recognise and know the value of different denominations of coins and notes.

			Compare and order numbers from 0 up to 100; use <, > and = signs.			Count, read and write numbers to 100 in numerals; count in multiples of 2, 5 and 10.
Year 2	**<u>Numbers to 100</u>** Count, read and write numbers to 100 in numerals; count in multiples of 2, 5 and 10. Recognise the place value of each digit in a two-digit number (tens, ones). Compare and order numbers from 0 up to 100; use <, > and = signs. Identify, represent and estimate numbers using different representations, including the number line. Count in steps of 2, 3 and 5 from 0 and in 10s from any number, forward and backward. **Addition and Subtraction (1)**	**<u>Addition and Subtraction (2)</u>** Add and subtract numbers using concrete objects, pictorial representations, and mentally, including two two-digit numbers. Solve problems with addition and subtraction: applying their increasing knowledge of mental and written methods. Add and subtract numbers using concrete objects, pictorial representations, and mentally, adding three 1-digit numbers. Solve problems with addition and subtraction using concrete objects and pictorial	**<u>Multiplication and division (2)</u>** Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs. Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers. Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods and multiplication and	**<u>Properties of shapes</u>** Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line. Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces. Compare and sort common 2D and 3D shapes and everyday objects. Order and arrange combinations of mathematical objects in patterns and sequences. **<u>Fractions</u>** Recognise, find and name a half as one of two equal parts of an	**<u>Position and direction</u>** 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. **<u>Problem solving and efficient methods</u>** Use place value and number facts to solve problems. Recognise and use the inverse relationship between addition and	**<u>Time</u>** Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. (Y1) 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. 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. Remember the number of minutes in an hour

	Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100. Solve problems with addition and subtraction using concrete objects and pictorial representations, including those involving numbers, quantities and measures. Add and subtract numbers where no regrouping is required, using concrete objects, pictorial representations, and mentally, including a two-digit number and ones. Count in steps of 2, 3 and 5 from 0 and in 10s from any number, forward and backward Add and subtract numbers using concrete objects, pictorial representations, and	representations, including those involving numbers, quantities and measures. **Money** Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value. Recognise and know the value of different denominations of coins and notes. (Y1) 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. **Multiplication and Division (1)** Solve one-step problems involving multiplication by calculating the	division facts, including problems in context. **Statistics** 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. **Length and height** 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,	object, shape or quantity. (Y1) Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity. (Y1) Recognise, find, name and write fractions 1/3, 1/4, 2/4 and 3/4 of a length, shape, set of objects or quantity and demonstrate understanding that all parts must be equal parts of the whole. Write simple fractions for example, 1/2 of 6 = 3 and recognise the equivalence of 2/4 and 1/2.	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. Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods and multiplication and division facts, including problems in context. Show that multiplication of two numbers can be done in any order (commutative law) and division of one number from another cannot.	and the number of hours in a day Read the time on a clock to the nearest 15 minutes. **Weight, volume and temperature** 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 =.

	mentally, including a two-digit number and tens. Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. Show that addition of two numbers can be done in any order (commutative law) and subtraction of one number from another cannot. Solve problems with addition and subtraction: applying their increasing knowledge of mental and written methods.	answer using concrete objects, pictorial representations and arrays with the support of the teacher. (Y1) Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs. Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers. Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods and multiplication and division facts, including problems in context.	thermometers and measuring vessels. Compare and order lengths, mass, volume/capacity and record the results using >, < and =. Solve problems with addition and subtraction using concrete objects and pictorial representations, including those involving numbers, quantities and measures.			

Year 3	**Place Value within 1,000** Recognise the place value of each digit in a three-digit number (hundreds, tens, ones). Read and write numbers up to 1000 in numerals. Read and write numbers up to 1000 in words. Identify, represent and estimate numbers using different representations. Compare and order numbers up to 1,000. 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. **Addition and subtraction (1)** Add and subtract numbers mentally,	**Addition and subtraction (2)** Add and subtract numbers mentally, including a three-digit number and ones Add and subtract numbers mentally, including a three-digit number and tens. Add and subtract numbers mentally, including a three-digit number and hundreds. Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. Add and subtract numbers with up to three digits, using the formal method of columnar addition and subtraction.	**Multiplication and division (2)** Write and calculate mathematical statements for multiplication and division using the multiplication tables that he/she knows, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. 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.	**Length** Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml). Measure the perimeter of simple 2-D shapes. **Fractions (1)** 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 and use fractions as numbers: unit fractions and non-unit fractions with small denominators. Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.	**Fractions (2)** Recognise and show, using diagrams, equivalent fractions with small denominators. Compare and order unit fractions, and fractions with the same denominators. Add fractions with the same denominator within one whole e.g. 5/7 + 1/7 = 6/7. Subtract fractions with the same denominator within one whole e.g. 6/7 - 1/7 = 5/7. Solve fraction problems. Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators. **Time**	**Angles and properties of shape** Recognise angles as a property of shape or a description of a turn. Identify right angles and identify whether other angles are greater or less than a right angle. Recognise that two right angles make a half turn, three make three quarters of a turn and four a complete turn Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them. Identify horizontal and vertical lines and pairs of perpendicular and parallel lines. **Mass** Measure, compare, add and subtract: lengths

	including a three-digit number and ones Add and subtract numbers mentally, including a three-digit number and tens. Add and subtract numbers mentally, including a three-digit number and hundreds. Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. Add and subtract numbers with up to three digits, using the formal method of columnar addition and subtraction.	Estimate the answer to a calculation and use inverse operations to check answers **Multiplication and division (1)** Write and calculate mathematical statements for multiplication and division using the multiplication tables that he/she knows, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling	Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign. **Money** Add and subtract amounts of money to give change, using both £ and p in practical contexts. **Statistics** Interpret and present data using bar charts, pictograms and tables. Solve one-step and two-step questions e.g. 'How many more?' and 'How many fewer?' using information presented in scaled bar charts and pictograms and tables.	Compare and order unit fractions, and fractions with the same denominators.	Tell the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks. Write the time using 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.	(m/cm/mm); mass (kg/g); volume/capacity (l/ml). **Capacity** Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml).

		problems and correspondence problems in which n objects are connected to m objects.			Compare durations of events e.g. to calculate the time taken by particular events or tasks.	
Year 4	**Place value – 4-digit numbers (1)** Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones). Round any number to the nearest 10, 100 or 1000. Count in multiples of 6, 7, 9, 25 and 1000. Identify, represent and estimate numbers using different representations including measures. Order and compare numbers beyond 1000. Read Roman numerals to 100 (I to C) and know that over time, the	**Addition and subtraction** Add numbers with up to four digits using the formal method of columnar addition. Subtract numbers with up to four digits using the formal method of columnar subtraction. Solve number and practical problems that involve all of the above and with increasingly large positive numbers. Round any number to the nearest 10, 100 or 1000. Estimate and use inverse operations to check answers to a calculation.	**Multiplication and division (2)** 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. Solve problems including addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign. Multiply two-digit and three-digit numbers by a	**Fractions (1)** Recognise and show, using diagrams, families of common equivalent fractions. 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. **Fractions (2)** Add and subtract fractions with the same denominator. Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities,	**Decimals (2)** Recognise and write decimal equivalents of any number of tenths or hundredths. 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. Add and subtract fractions with the same denominator. Compare numbers with the same number of decimal places up to two decimal places. Round decimals with one decimal place to	**Statistics** 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. **Geometry – angles and 2D shapes** Identify acute and obtuse angles and compare and order angles up to two right angles by size. Compare and classify geometric shapes, including quadrilaterals

	numeral system changed to include the concept of zero and place value. **Place value – 4-digit numbers (2)** Find 1000 more or less than a given number. Identify, represent and estimate numbers using different representations including measures. Order and compare numbers beyond 1000. Count in multiples of 6, 7, 9, 25 and 1000. Round any number to the nearest 10, 100 or 1000. Solve number and practical problems that involve all of the above and with increasingly large positive numbers.	Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why. **Measure – Perimeter** Convert between different units of measure e.g. kilometre to metre; hour to minute Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres. **Multiplication and division (1)** Recall multiplication and division facts for multiplication tables up to 12 × 12. Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1;	one-digit number using formal written layout. 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. **Measure – area** Find the area of rectilinear shapes by counting squares. Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. Estimate, compare and calculate different measures, including	including non-unit fractions where the answer is a whole number. **Decimals (1)** Recognise and write decimal equivalents of any number of tenths or hundredths. 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. Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. Solve simple measure and money problems involving fractions and decimals to two decimal places.	the nearest whole number. Recognise and write decimal equivalents to ¼, ½, ¾. Solve simple measure and money problems involving fractions and decimals to two decimal places. **Money** Solve simple measure and money problems involving fractions and decimals to two decimal places. Estimate, compare and calculate different measures, including money in pounds and pence. **Time** Convert between different units of measure e.g. kilometre to metre; hour to minute.	and triangles, based on their properties and sizes. 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. **Geometry – position and direction** Describe positions on a 2-D grid as coordinates in the first quadrant. Describe movements between positions as translations of a given unit to the left/right and up/down. Plot specified points and draw sides to complete a given polygon.

	Count backwards through zero to include negative numbers. Interpret negative umbers in context, count forwards and backwards with positive and negative whole numbers, including through zero.	dividing by 1; multiplying together three numbers. Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.	money in pounds and pence.			
Year 5	**<u>Place value within 100,000</u>** Read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit. Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 10, 000. Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000. Solve number and practical problems.	**<u>Graphs and tables</u>** Complete, read and interpret information in tables, including timetables. Solve comparison, sum and difference problems using information presented in a line graph. **<u>Multiplication and division (1)</u>** Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.	**<u>Multiplication and division (2)</u>** Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers. Multiply and divide numbers mentally drawing upon known facts. Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders	**<u>Fractions (3)</u>** Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams. Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number e.g. 2/5 + 4/5 = 6/5 = 1 1/5. **<u>Decimals and percentages</u>** Read, write, order and compare numbers with	**<u>Decimals</u>** Solve problems involving number up to three decimal places. Read, write, order and compare numbers with up to three decimal places. Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents. **<u>Geometry – properties of shapes (1)</u>** Identify angles at a point and one whole turn (total 360°).	**<u>Geometry – position and direction</u>** 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. **<u>Measure – converting units</u>** Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and

	Read Roman numerals to 1000 (M) and recognise years written in Roman numerals. **Place value within 1,000,000** Read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit. Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 10, 000. Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000. Solve number and practical problems. Interpret negative numbers in context, count forwards and backwards with positive	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 the notation for squared (2). Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes. Recognise and use cube numbers and the notation for cubed (3). Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.	appropriately for the context. **Fractions (1)** Identify and name equivalent fractions of a given fraction, represented visually, including tenths and hundredths. Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number e.g. 2/5 + 4/5 = 6/5 = 1 1/5. Compare and order fractions whose denominators are all multiples of the same number. **Fractions (2)** Add and subtract fractions with the same denominator and denominators that are	up to three decimal places. Read and write decimal numbers as fractions e.g. 0.71 = 71/100. Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents. Round decimals with two decimal places to the nearest whole number and to one decimal place. Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal. Solve problems which require knowing percentage and	Identify angles at a point on a straight line and 1/2 a turn (total 180°). Identify other multiples of 90°. Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles. Draw given angles, and measure them in degrees (°). Use the properties of rectangles to deduce related facts and find missing lengths and angles. **Geometry – properties of shapes (2)** Identify angles at a point and one whole turn (total 360°).	kilogram; litre and millilitre). Use all four operations to solve problems involving measure e.g. length, mass, volume, money using decimal notation, including scaling. Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints. Solve problems involving converting between units of time. **Measure – volume and capacity** Estimate volume e.g. using 1 cm³ blocks to build cuboids (including

	and negative whole numbers, including through zero. **<u>Addition and subtraction</u>** Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction). Add and subtract numbers mentally with increasingly large numbers. Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy. Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.	Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. **<u>Measure – area and perimeter</u>** Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes.	multiples of the same number. Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number e.g. 2/5 + 4/5 = 6/5 = 1 1/5.	decimal equivalents of 1/2, 1/4, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25. Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.	Identify angles at a point on a straight line and 1/2 a turn (total 180°). Identify other multiples of 90°. Draw given angles, and measure them in degrees (°). Use the properties of rectangles to deduce related facts and find missing lengths and angles. Identify 3-D shapes, including cubes and other cuboids, from 2-D representations. Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.	cubes) and capacity e.g. using water.

Year 6	**Place value within 10,000,000** Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit. Round any whole number to a required degree of accuracy. Use negative numbers in context, and calculate intervals across zero. Solve number and practical problems that involve ordering and comparing numbers to 10 000 000, rounding to a required degree of accuracy, using negative numbers and calculating intervals across zero. **Four operations (1)** Solve addition and subtraction multi-step problems in contexts, deciding which	**Fractions (1)** 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. **Fractions (2)** Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams. Multiply simple pairs of proper fractions, writing the answer in its simplest form e.g. 1/4 × 1/2 = 1/8.	**Decimals** Identify the value of each digit given to three decimal places and multiply and divide numbers by 10, 100 and 1,000 giving answers up to three decimal places. Associate a fraction with division and calculate decimal fraction equivalents e.g. know that 7 divided by 21 is the same as 7/21 and that this is equal to 1/3 and e.g. 0.375 is equivalent to 3/8. Use written division methods in cases where the answer has up to two decimal places. Multiply one-digit numbers with up to two decimal places by whole numbers. Solve problems which require answers to be	**Measure – imperial and metric measures** Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate. Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places. Convert between miles and kilometres. **Measure – perimeter, area and volume** Recognise that shapes with the same areas can have different perimeters and vice versa.	**Geometry – properties of shapes** Draw 2-D shapes using given dimensions and angles. Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons. Recognise, describe and build simple 3-D shapes, including making nets. 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.	**Problem solving (continued)** Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples. Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts. 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

	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. 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. 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. **Four operations (2)**	Divide proper fractions by whole numbers e.g. 1/3 ÷ 2 = 1/6 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 e.g. 1/4 × 1/2 = 1/8. Use written division methods in cases where the answer has up to two decimal places. Use their knowledge of the order of operations to carry out calculations involving the four operations. **Geometry – position and direction** Describe positions on the full coordinate grid (all four quadrants).	rounded to specified degrees of accuracy. **Percentages** Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. Solve problems involving the calculation of percentages and the use of percentages for comparison. Multiply simple pairs of proper fractions, writing the answer in its simplest form e.g. 1/4 × 1/2 = 1/8. Compare and order fractions, including fractions >1. Solve problems which require answers to be rounded to specified degrees of accuracy.	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 (cm^3) and cubic metres (m^3), and extending to other units e.g. mm^3 and km^3. **Ratio and proportion** Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples. Solve problems involving the relative sizes of two quantities where missing values can be found by using integer	Identify 3D shapes including cubes and other cuboids, from 2D representations. **Problem Solving** Solve number and practical problems that involve all aspects of the previous learning. Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. 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 their knowledge of the order of operations	decimal notation to up to three decimal places. Describe positions on the full coordinate grid (all four quadrants). Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles. Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons. **Statistics** Interpret and construct pie charts and line graphs and use these to solve problems. Calculate and interpret the mean as an average.

	Identify common factors, common multiples and prime numbers. Recognise and use square numbers and cube numbers, and the notations. (Y5) Use their knowledge of the order of operations to carry out calculations involving the four operations. Perform mental calculations, including with mixed operations and large numbers. Solve problems involving addition, subtraction, multiplication and division.	Draw and translate simple shapes on the coordinate plane, and reflect them in the axes.	**Algebra** Use simple formulae e.g. perimeter of a rectangle or area of a triangle. Generate and describe linear number sequences. Express missing number problems algebraically. Find pairs of numbers that satisfy an equation with two unknowns. Enumerate possibilities of combinations of two variables.	multiplication and division facts. Solve problems involving similar shapes where the scale factor is known or can be found.	to carry out calculations involving the four operations.	Solve problems involving the calculation of percentages and the use of percentages for comparison.