

Year 6 - Maths Teaching Overview



Autumn 1		
<p>Number and place value (NPV); Mental multiplication and division (MMD); Decimals, percentages and their equivalence to fractions (DPE); Fractions, ratio and proportion (FRP)</p>	<p>Read, write and compare 6-digit numbers and know what each digit represents; read, write and compare 1-, 2- and 3-place decimal numbers; multiply and divide by 10, 100 and 1000; round decimals to nearest tenth and whole number and place on a number line; convert decimals (up to 3 places) to fractions and vice-versa.</p>	<ul style="list-style-type: none"> • read, write and compare 6-digit numbers • say what each digit represents in 6-digit numbers.
		<ul style="list-style-type: none"> • multiply and divide by 10, 100 and 1000 with answers up to and including 6-digit numbers and 2-place decimals • understand 2-place decimals are tenths and hundredths.
		<ul style="list-style-type: none"> • read, write and compare 3-place decimal numbers • children can say the value of each digit in a 3-place decimal number and write as fractions • work and record results systematically to find all possible combinations of numbers.
		<ul style="list-style-type: none"> • round decimal numbers (up to 3-places) to nearest tenth and nearest whole number • locate decimal numbers (up to 3-places) on landmarked number lines.
		<ul style="list-style-type: none"> • write fraction equivalents of 1-, 2-, and 3-place decimals writing them as fractions over 10, 100 or 1000 as appropriate • write the decimal equivalent of any fraction where 10, 100 or 1000 is the denominator.
		<ul style="list-style-type: none"> • choose an appropriate mental strategy to solve addition.
<p>Mental addition and subtraction (MAS); Written addition and subtraction (WAS); Number and place value (NPV); Problem solving, reasoning and algebra (PRA); Decimals, percentages and their equivalence to fractions (DPE)</p>	<p>Use mental addition strategies to solve additions including decimal numbers; use column addition to add 5-digit numbers, decimal numbers and amounts of money; solve problems involving number up to 3 decimal places, choose an appropriate method to solve decimal addition.</p>	<ul style="list-style-type: none"> • add 5-digit numbers using column addition. • add decimal numbers using mental strategies.
		<ul style="list-style-type: none"> • add decimal numbers using column addition • add amounts of money (pounds and pence) using column addition.
		<ul style="list-style-type: none"> • choose an appropriate method to add decimal numbers (mental or written) • add decimal numbers using column addition and mental strategies.
		<ul style="list-style-type: none"> • solve missing number problems where the missing number is given as a letter • use mathematical reasoning to solve problems.
		<ul style="list-style-type: none"> • find pairs of numbers which fit equations with two unknowns • solve equations with two unknowns if they are given more information to help them.
		<ul style="list-style-type: none"> • find missing angles and lengths when given sufficient information • solve equations with two unknowns using trial and improvement methods.
<p>Problem solving, reasoning and algebra (PRA); Mental addition and subtraction (MAS)</p>	<p>Express missing number problems algebraically and find pairs of numbers that satisfy equations involving two unknowns; find missing lengths and angles; understand how brackets can be used in calculation problems; use knowledge of the order of operations to carry out calculations involving the four operations, solve addition and subtraction multi-step problems using knowledge of the order of operations.</p>	<ul style="list-style-type: none"> • use their knowledge of the order of operations to carry out calculations involving addition, subtraction, multiplication and division • use brackets in calculations correctly.
		<ul style="list-style-type: none"> • say the order in which they have to do operations within a calculation • solve multi-step problems involving addition, subtraction, multiplication or division.

Measurement (MEA); Problem solving, reasoning and algebra (PRA); Number and place value (NPV)	Convert between grams and kilograms, millilitres and litres, millimetres and centimetres, centimetres and metres, metres and kilometres, and miles and kilometres; revise reading the 24-hour clock and convert 12-hour times to 24-hour; read and write Roman numerals; find time intervals using the 24-hour clock.	<ul style="list-style-type: none"> convert grams to kilograms and vice versa convert millilitres to litres and vice versa begin to convert kilograms to tonnes and vice versa.
		<ul style="list-style-type: none"> convert between millimetres and centimetres, between centimetres and metres, and between metres and kilometres.
		<ul style="list-style-type: none"> understand that 5 miles is approximately equivalent to 8 kilometres use this knowledge to work out other equivalent distances.
		<ul style="list-style-type: none"> write times given in words or 12-hour format using the 24-hour format read and write years using Roman numerals.
		<ul style="list-style-type: none"> use counting up to calculate time intervals count on and back in hours and minutes, bridging the hour to find start and finish times.
Problem solving, reasoning and algebra (PRA); Number and place value (NPV); Mental addition and subtraction (MAS); Written addition and subtraction (WAS)	Use mental addition, column subtraction and Counting up to solve subtractions of amounts of money and word problems; use mathematical reasoning to investigate.	<ul style="list-style-type: none"> choose an appropriate mental strategy to solve subtraction.
		<ul style="list-style-type: none"> subtract 5-digit numbers using column subtraction (decomposition).
		<ul style="list-style-type: none"> subtract decimal numbers using mental strategies (rounding, place value and counting up).
		<ul style="list-style-type: none"> subtract mixed decimal numbers using counting up (Frog) use mathematical reasoning to investigate.
		<ul style="list-style-type: none"> solve subtractions involving money using counting up solve word problems.
Autumn 2		
Mental multiplication and division (MMD); Mental addition and subtraction (MAS); Written multiplication and division (WMD); Problem solving, reasoning and algebra (PRA); Number and place value (NPV)	Use mental multiplication strategies to multiply by numbers such as 4, 8, 5, 25, 19, 29 and 99; revise using short multiplication to multiply 4-digit numbers by 1-digit numbers and use this to multiply amounts of money; solve word problems involving multiplication including two-step problems and finding change; use long multiplication to multiply 3-digit and 4-digit numbers by teens numbers.	<ul style="list-style-type: none"> use mental multiplication strategies to multiply by numbers such as 4, 8, 5, 25, 19, 29 and 99.
		<ul style="list-style-type: none"> use short multiplication to multiply 4-digit numbers by 1-digit numbers approximate answers first.
		<ul style="list-style-type: none"> use short multiplication to multiply 4-digit amounts of money, e.g. £46.29 by 1-digit numbers make approximations solve word problems involving multiplication including two-step problems and finding change.
		<ul style="list-style-type: none"> use long multiplication to multiply 3- and 4-digit numbers by teens numbers make an approximation.
		<ul style="list-style-type: none"> use long multiplication to multiply 4-digit numbers by teens numbers make an approximation.
Number and place value (NPV); Problem solving, reasoning and	Understand negative numbers; calculate small differences between negative numbers and negative	<ul style="list-style-type: none"> read, write and order negative numbers calculate small differences involving positive and negative numbers.

algebra (PRA); Fractions, ratio and proportion (FRP)	and positive numbers; add and subtract negative numbers; compare fractions with unlike, but related, denominators; correctly use the terms fraction, denominator and numerator; understand what improper fractions and mixed numbers are and add fractions with the same denominator, writing the answer as a mixed number	<ul style="list-style-type: none"> • use negative numbers to solve simple additions and subtractions and calculate differences in context • give generalisations to describe what happens when adding and subtracting with positive and negative numbers.
		<ul style="list-style-type: none"> • compare simple fractions with different (related) denominators • generate equivalent fractions.
		<ul style="list-style-type: none"> • compare simple fractions with different (related) denominators • generate equivalent fractions.
		<ul style="list-style-type: none"> • convert fractions to mixed numbers • add fractions with the same denominator.
Measurement (MEA); Geometry: properties of shapes (GPS)	Calculate the perimeter, area and volume of shapes, and know their units of measurement; understand that shapes can have the same perimeters but different areas and vice versa; calculate the area of a triangle using the formula $A = \frac{1}{2}b \times h$; find the area of parallelograms using the formula $A = b \times h$; name and describe properties of 3D shapes; systematically find and compare nets for different 3D shapes.	<ul style="list-style-type: none"> • calculate area and perimeter of rectangles and simple rectilinear shapes • understand that perimeter is measured in cm, m, km, etc. and that area is measured in cm^2, m^2, km^2 • understand that shapes can have the same perimeters but different areas or the same areas but different perimeters
		<ul style="list-style-type: none"> • calculate the volume of cubes and cuboids and understand that volume is measured in units cubed • recognise that area is measured in two dimensions and volume is measured in three dimensions.
		<ul style="list-style-type: none"> • calculate the area of a triangle using the formula $\frac{1}{2}b \times h$ • understand that all triangles are half a rectangle.
		<ul style="list-style-type: none"> • use the formula $A = b \times h$ to calculate the area of a parallelogram • understand the relationship between a parallelogram and a rectangle.
		<ul style="list-style-type: none"> • name and describe 3D shapes • begin to draw and recognise nets for 3D shapes and understand these can be drawn in different ways • work systematically to find and compare possible nets for different 3D shapes.
		<ul style="list-style-type: none"> • use mental strategies to divide by 2, 4, 8, 5, 20 and 25 • understand multiplication and division as inverses of each other.
		<ul style="list-style-type: none"> • find non-unit fractions of amounts mentally.
Mental multiplication and division (MMD); Fractions, ratio and proportion (FRP); Written multiplication and division (WMD); Problem solving, reasoning and algebra (PRA)	Use mental strategies to divide by 2, 4, 8, 5, 20 and 25; find non-unit fractions of amounts; use short division to divide 3- and 4-digit numbers by 1-digit numbers, including those which leave a remainder; express a remainder as a fraction, simplifying where possible.	<ul style="list-style-type: none"> • use short division to divide 3-digit and 4-digit numbers by 1-digit numbers, including those which leave a remainder • express a remainder as fraction, simplifying where possible.
		<ul style="list-style-type: none"> • divide any 4-digit number by a 1-digit number
		<ul style="list-style-type: none"> • express the remainder as a fraction, simplifying where possible.

		<ul style="list-style-type: none"> • divide any 4-digit number by a 1-digit number • express the remainder as a fraction, simplifying where possible • use reasoning and previous answers to move towards a solution.
Problem solving, reasoning and algebra (PRA); Fractions, ratio and proportion (FRP); Decimals, percentages and their equivalence to fractions (DPE)	Add and subtract unit fractions with different denominators including mixed numbers; use mental strategies to find simple percentages of amounts, including money	<ul style="list-style-type: none"> • add unit fractions with different denominators.
		<ul style="list-style-type: none"> • use equivalence to add mixed numbers where the fractions are unit fractions with different denominators.
		<ul style="list-style-type: none"> • subtract pairs of unit fractions using equivalence • spot and test a rule.
		<ul style="list-style-type: none"> • use their knowledge of equivalence between fractions and percentages, and mental strategies to find simple percentages of amounts (whole number answers).
		<ul style="list-style-type: none"> • use their knowledge of equivalence between fractions and percentages, and mental strategies to find simple percentages of amounts of money (answers with two decimal places).
Spring 1		
Fractions, ratio and proportion (FRP)	Multiply fractions less than 1 by whole numbers, converting improper fractions to whole numbers; use commutativity to efficiently multiply fractions by whole numbers; divide unit and non-unit fractions by whole numbers; solve word problems involving fractions.	<ul style="list-style-type: none"> • multiply fractions less than 1 by whole numbers • convert improper fractions to whole numbers.
		<ul style="list-style-type: none"> • multiply fractions less than 1 by whole numbers, converting improper fractions to whole numbers • use commutativity to multiply fractions by whole numbers in the most efficient way.
		<ul style="list-style-type: none"> • divide unit fractions by whole numbers.
		<ul style="list-style-type: none"> • divide unit fractions by whole numbers • begin to divide non-unit fractions by whole numbers.
		<ul style="list-style-type: none"> • add, subtract, multiply and divide fractions • solve word problems involving fractions.
Number and place value (NPV); Written addition and subtraction (WAS)	Read and write numbers with up to 7-digits, understanding what each digit represents; work systematically to find out how many numbers round to 5000000; solve subtraction of 5- and 6-digit numbers using written column method (decomposition).	<ul style="list-style-type: none"> • read, write, compare and order 7-digit numbers.
		<ul style="list-style-type: none"> • read, write, compare and order 7-digit numbers.
		<ul style="list-style-type: none"> • read, write, compare and order numbers with 7 digits • locate 7-digit numbers on a line and round to nearest million.
		<ul style="list-style-type: none"> • use column subtraction to subtract 5- and 6-digit number subtractions • solve subtractions of 5- and 6-digit numbers.
		<ul style="list-style-type: none"> • use column subtraction to subtract 5- & 6-digit number subtractions

		<ul style="list-style-type: none"> • solve subtractions of 5- & 6-digit numbers.
Fractions, ratio and proportion (FRP) ; Decimals, percentages and their equivalence to fractions (DPE)	Multiply and divide by 10, 100 and 1000; compare and order numbers with up to three decimal places; know common fraction / decimal equivalents; multiply pairs of unit fractions and multiply unit fractions by non-unit fractions.	<ul style="list-style-type: none"> • multiply and divide by 10, 100 and 1000 • understand what each digit represents in numbers with three decimal places.
		<ul style="list-style-type: none"> • compare and order numbers with 1, 2, or 3 decimal places • write a number between any pair with 0, 1 or 2 decimal places.
		<ul style="list-style-type: none"> • identify common equivalent fractions and decimals, e.g. 1/8s • place numbers with 2 decimal place on a 0 to 1 line.
		<ul style="list-style-type: none"> • multiply pairs of unit fractions by reading the \times sign as 'of'.
		<ul style="list-style-type: none"> • multiply unit fractions by non-unit fractions e.g., $\frac{1}{2} \times \frac{2}{3}$ by multiplying the numerator and the denominators.
Mental multiplication and division (MMD) ; Written multiplication and division (WMD) ; Problem solving, reasoning and algebra (PRA) ; Number and place value (NPV)	Use partitioning to mentally multiply 2-digit numbers with one decimal place by whole 1-digit numbers; multiply numbers with two decimal places; use short multiplication to multiply amounts of money; use estimation to check answers to calculations; use long multiplication to multiply 3-digit and 4-digit numbers by numbers between 10 and 30.	<ul style="list-style-type: none"> • use mental strategies to multiply 2-digit numbers with one decimal place by single-digit whole numbers.
		<ul style="list-style-type: none"> • multiply numbers with two decimal places by single-digit numbers by multiplying by 100, carrying out a short multiplication, then dividing to give the answer? • use rounding to estimate the answers to multiplications.
		<ul style="list-style-type: none"> • use short multiplication to multiply 4-digit amounts of money by single digit numbers, e.g. $5 \times \text{£}98.76$ • make approximations.
		<ul style="list-style-type: none"> • use long multiplication to multiply 3-digit and 4-digit numbers by numbers between 10 and 30.
		<ul style="list-style-type: none"> • use long multiplication to multiply 4-digit numbers by numbers between 10 and 30 • make an approximation.
Geometry: properties of shapes (GPS) ; Problem solving, reasoning and algebra (PRA)	Name, classify and identify properties of quadrilaterals; explore how diagonal lines can bisect quadrilaterals; understand what an angle is and that it is measured in degrees; know what the angles of triangles, quadrilaterals, pentagons, hexagons and octagons add to and use these facts and mathematical reasoning to calculate missing angles; recognise and identify the properties of circles and name their parts; draw circles using pairs of compasses; draw polygons using a ruler and a protractor	<ul style="list-style-type: none"> • name and classify quadrilaterals according to their properties • begin to know how diagonal lines bisect quadrilaterals • draw accurate shapes and diagonal lines.
		<ul style="list-style-type: none"> • know that the angles in a triangle add to 180° and use this fact to calculate missing angles • know that the angles in a quadrilateral add to 360° and use this fact to calculate missing angles.
		<ul style="list-style-type: none"> • know that the angles in a pentagon total 540° and use this fact to calculate missing angles • know that the angles in a hexagon total 720° and use this fact to calculate missing angles
		<ul style="list-style-type: none"> • use mathematical reasoning to calculate missing angles.
		<ul style="list-style-type: none"> • draw a circle using a pair of compasses

		<ul style="list-style-type: none"> • identify parts of a circle. • draw 2D shapes accurately using ruler, protractor and pairs of compasses • identify parts of a circle.
Spring 2		
Mental addition and subtraction (MAS); Number and place value (NPV); Written addition and subtraction (WAS); Problem solving, reasoning and algebra (PRA)	Add and subtract numbers using mental strategies; solve addition of 4- to 7-digit numbers using written column addition; identify patterns in the number of steps required to generate palindromic numbers; solve subtraction of 5-, 6- and 7-digit numbers using written column method (decomposition); solve additions and subtractions choosing mental strategies or written procedures as appropriate; read, understand and solve word problems	<ul style="list-style-type: none"> • use mental strategies (including place value, rounding, using number facts and partitioning) to add numbers.
		<ul style="list-style-type: none"> • solve subtractions using mental strategies, e.g. rounding, place value, quick counting up, etc.
		<ul style="list-style-type: none"> • use written column addition to add large numbers: 4-digit, 5-digit, 6-digit and 7-digit • identify patterns in the number of steps required to generate palindromic numbers.
		<ul style="list-style-type: none"> • use column subtraction to subtract 6- and 7-digit numbers.
		<ul style="list-style-type: none"> • use column addition and subtraction to solve problems • use mental strategies to solve problems • decide on an appropriate strategy to solve addition and subtraction.
Written multiplication and division (WMD); Number and place value (NPV); Problem solving, reasoning and algebra (PRA)	Identify common factors and common multiples; understand that a prime number has exactly two factors and find prime numbers less than 100; understand what a composite (non-prime) number is; use long division to divide 3- and 4-digit numbers by 2-digit numbers, giving remainders as a fraction, simplifying where possible	<ul style="list-style-type: none"> • identify common factors and multiples. • identify the highest common factor and the lowest common multiple.
		<ul style="list-style-type: none"> • identify prime numbers up to 100 • make and test general statements.
		<ul style="list-style-type: none"> • confidently use short division to divide 4-digit numbers by single-digit numbers. • spot patterns, make and test general rules, checking when an answer does not fit the predicted pattern.
		<ul style="list-style-type: none"> • use long division to divide 3-digit numbers by 2-digit numbers. • make an estimate using multiples of ten of the divisor.
		<ul style="list-style-type: none"> • use long division to divide 4-digit numbers by two-digit numbers. • make an estimate using multiples of 10 and 100 of the divisor.
		<ul style="list-style-type: none"> • add amounts of money (pounds and pence) using column addition • calculate change using counting up • solve addition and subtraction multi-step problems in shopping contexts.
Mental addition and subtraction (MAS); Written addition and subtraction (WAS); Problem solving, reasoning and algebra (PRA)	Solve addition and subtraction multi-step problems in shopping contexts, and add and subtract money using column addition and counting up; add and subtract decimal numbers choosing an appropriate strategy, and add decimal numbers with different numbers of places using column addition; use mathematical reasoning to investigate and solve problems, and solve subtractions of decimal numbers with different numbers of places (2-places) using counting up	<ul style="list-style-type: none"> • add decimal numbers with different numbers of places using column addition • add decimal numbers with different numbers of places using mental strategies.
		<ul style="list-style-type: none"> • solve subtractions of 2-place decimal numbers • use mathematical reasoning to investigate and solve problems.
		<ul style="list-style-type: none"> • use a variety of methods to add and subtract decimal numbers • choose an appropriate strategy mental or written to solve calculations.
		<ul style="list-style-type: none"> • solve multi-step problems involving addition and subtraction of decimals and money in context

		<ul style="list-style-type: none"> choose the most appropriate method to add and subtract decimal numbers.
Statistics (STA); Decimals, percentages and their equivalence to fractions (DPE)	Calculate and understand the mean average; construct and interpret distance/time line graphs where intermediate points have meaning, including conversion line graphs; understand pie charts are a way of representing data using percentages, interpret and construct pie charts	<ul style="list-style-type: none"> calculate mean average from sets of simple data begin to understand mathematical concept of mean average and use to make comparisons.
		<ul style="list-style-type: none"> draw, read and interpret line graphs children can read and interpret distance time graphs, understanding a flat horizontal line represents a break/rest and the steeper the line the faster the speed.
		<ul style="list-style-type: none"> draw, read and interpret line graphs understand and use a conversion graph to convert measures, e.g. miles to km, centimetres to inches.
		<ul style="list-style-type: none"> understand the concept of a pie chart read and interpret a pie-chart.
		<ul style="list-style-type: none"> read and interpret a pie chart begin to construct a pie chart.
Geometry: position and direction (GPD); Number and place value (NPV); Problem solving, reasoning and algebra (PRA); Geometry: properties of shapes (GPS)	Read and plot coordinates in all four quadrants, draw and translate simple polygons using coordinates and find missing coordinates for a vertex on a polygon; draw and reflect simple polygons in both the x-axis and y-axis using coordinates; find unknown angles around a point, on a line, in a triangle or vertically opposite and in polygons where diagonals intersect	<ul style="list-style-type: none"> plot coordinates in any quadrant and draw a simple polygon translate a polygon by adding or subtracting a number to one coordinate (the x-coordinate or the y-coordinate) find the new coordinates for a vertex of a given polygon.
		<ul style="list-style-type: none"> plot coordinates in any quadrant and draw a simple polygon reflect a shape in the x-axis by changing the sign of the y-coordinate understand that to move a shape to a diagonally opposite quadrant we change the signs of both the x- and y-coordinates.
		<ul style="list-style-type: none"> draw shapes reflected in the x-axis and in the y-axis translate shapes along the x-axis or the y-axis find the coordinates for a missing point in a regular polygon.
		<ul style="list-style-type: none"> measure angles using a protractor find missing angles round a point or on a straight line find a missing angle in a triangle.
		<ul style="list-style-type: none"> find missing angles round a point, on a line and in a triangle draw shapes with given measurements measure angles using a protractor discuss and make generalisations.
Summer 1		
Written multiplication and division (WMD);	Multiply 4-digit numbers including those with two decimal places by 1-digit numbers; use long	<ul style="list-style-type: none"> use short multiplication to multiply 4-digit whole numbers by 1-digit numbers use short multiplication to multiply 4-digit amounts of money by 1-digit numbers.

Problem solving, reasoning and algebra (PRA)	multiplication to multiply 4-digit numbers by numbers between 10 and 30, including those with two decimal places; revise using short division to divide 4-digit by 1-digit and 2-digit numbers including those which leave a remainder, and divide the remainder by the divisor to give a fraction, simplifying where possible, and make approximations; use long division to divide 4-digit by 2-digit numbers, and use a systematic approach to solve problems	<ul style="list-style-type: none"> • use long multiplication to multiply 4-digit numbers by numbers between 10 and 30 • multiply by 100, then use long multiplication and divide by 100 to multiply numbers with two decimal places by numbers between 10 and 30.
		<ul style="list-style-type: none"> • use short division to divide 4-digit numbers by 1-digit numbers including those which leave a remainder • divide the remainder by the divisor to give a fraction • approximate answers.
		<ul style="list-style-type: none"> • use long division to divide 4-digit numbers by 2-digit numbers, dividing any remainders by the divisor to give a fraction, simplifying where possible • make approximations.
		<ul style="list-style-type: none"> • use long division to divide 4-digit numbers by 2-digit numbers • use a systematic approach to solve problems involving multiplication and division.
Problem solving, reasoning and algebra (PRA); Fractions, ratio and proportion (FRP)	Generalise a relationship between pairs of numbers, express simple formulae in words, then using letters; describe and continue sequences, generalise to predict the tenth term, begin to generalise a term in a sequence using n to stand for the number of the term in a sequence; describe ratio and use ratio to solve problems; find fractions and simplify ratios	<ul style="list-style-type: none"> • understand how a letter can stand for a variable • describe a two-step function in words • begin to describe a function using n as a variable.
		<ul style="list-style-type: none"> • describe and continue line sequences • generalise to predict the tenth term in a sequence • begin to generalise a term in a sequence using n to stand for the number of the term in a sequence.
		<ul style="list-style-type: none"> • describe and continue linear sequence • generalise to predict the 10th number • begin to generalise a number in a sequence using n to stand for the number of the number in a sequence.
		<ul style="list-style-type: none"> • identify ratios • solve problems involving simple ratios.
		<ul style="list-style-type: none"> • identify ratios between quantities. • use ratio to solve problems, e.g. scaling up and down ingredients for a recipe.
Decimals, percentages and their equivalence to fractions (DPE); Number and place value (NPV)	Revise reading, writing, comparing and ordering numbers with up to seven digits and decimal numbers with up to three decimal places; revise rounding decimal numbers to the nearest tenth and whole number; revise rounding big numbers to the nearest thousand, ten thousand, hundred thousand and million; revise locating a number on a number line marking numbers it lies between; revise comparing and ordering negative numbers including	<ul style="list-style-type: none"> • read, write, compare and order 7-digit numbers • understand place value in 6- and 7-digit numbers.
		<ul style="list-style-type: none"> • read, write, compare and order decimal numbers with up to three decimal places.
		<ul style="list-style-type: none"> • multiple and divide by 10,100, 1000 and 1/10 • understand that multiplying and dividing by multiples of 10 involves moving the digits of a number a certain number of places to the left or right.
		<ul style="list-style-type: none"> • use a number line to locate and round decimal numbers and large numbers • round decimals to the nearest tenth and whole

	calculating differences between negative numbers and positive and negative numbers	<ul style="list-style-type: none"> round big numbers to the nearest 1000. compare and order positive and negative numbers.
<p>Number and place value (NPV); Mental addition and subtraction (MAS); Written addition and subtraction (WAS); Decimals, percentages and their equivalence to fractions (DPE); Problem solving, reasoning and algebra (PRA); Geometry: properties of shapes (GPS); Fractions, ratio and proportion (FRP)</p>	<p>Revise adding and subtracting whole numbers and decimal numbers using mental and written methods; revise finding percentages of numbers, converting fractions, decimals and percentages and making comparisons using percentages; revise how brackets can be used in calculation problems, revise the order of operations for calculations involving the four operations; revise solving missing number problems using inverse operations; revise using trial and improvement to solve equations involving one or two unknowns, and find missing lengths and angles</p>	<ul style="list-style-type: none"> solve additions and subtractions of whole numbers, choosing an appropriate method.
		<ul style="list-style-type: none"> solve additions and subtractions of decimal numbers, choosing an appropriate method.
		<ul style="list-style-type: none"> calculate percentages and compare them calculate numbers from percentages and compare them.
		<ul style="list-style-type: none"> use brackets and order of operations to solve calculations find an unknown number using inverse operations.
		<ul style="list-style-type: none"> solve equations with one unknown quantity solve equations with two unknown quantities find missing lengths and angles in shapes.
<p>Mental addition and subtraction (MAS); Fractions, ratio and proportion (FRP); Written multiplication and division (WMD); Mental multiplication and division (MMD); Problem solving, reasoning and algebra (PRA); Number and place value (NPV)</p>	<p>Revise scaling, using mental strategies for multiplying and dividing; revise solving problems involving rate; revise multiplying pairs of 2-digit numbers and finding factors of 2-digit numbers; multiply 3-digit and 4-digit numbers including decimals by whole 1-digit numbers and solve word problems involving multiplication of money and measures; use a systematic approach to solve problems involving multiplication and division, including long multiplication of 3-digit and 4-digit numbers and decimals</p>	<ul style="list-style-type: none"> solve problems involving scale use mental strategies to multiply and divide.
		<ul style="list-style-type: none"> solve problems involving rate.
		<ul style="list-style-type: none"> find factors of 2-digit numbers find highest common factor and lowest common multiple multiply pairs of 2-digit numbers together.
		<ul style="list-style-type: none"> use short multiplication to multiply 4-digit numbers by single-digit numbers multiply decimals by single-digit numbers by multiplying by 10/100 to make a whole number calculation then dividing 10/100 to find the answer solve word problems involving multiplication of money and measures.
		<ul style="list-style-type: none"> use long multiplication to multiply 4-digit numbers by numbers between 10 and 30 use long multiplication and multiplication and division by 10 or 100 to multiply numbers with a decimal part solve problems involving multiplication of money and measures.
Summer 1		
Written multiplication and division (WMD);	Revise using short division to find unit fractions of amounts, including decimals, and round answers to	<ul style="list-style-type: none"> use short division to divide 3- and 4-digit decimal numbers, including amounts of money, by multiplying by 10/100, then dividing by 10/100 afterwards so that they

Problem solving, reasoning and algebra (PRA); Number and place value (NPV); Statistics (STA); Geometry: position and direction (GPD)	money problems according to the context; revise using long division to divide 4-digit by 2-digit numbers, giving remainders as a fraction, simplifying where possible; revise using long division to divide 3-digit and 4-digit numbers by numbers between 10 and 30, writing the fractional part of the answer as a decimal where equivalents are known; revise calculating the mean average; revise reading and marking coordinates in all four quadrants, draw simple polygons and find missing coordinates on a polygon or line	carry out the division without the decimal point <ul style="list-style-type: none"> estimate answers show their workings clearly solve money problems that require answers to be rounded
		<ul style="list-style-type: none"> use long division to divide 3-digit and 4-digit numbers by 2-digit numbers round up or down after division according to the context.
		<ul style="list-style-type: none"> use long division to divide 3-digit and 4-digit numbers by numbers between 10 and 30, finding the exact answer and writing the fractional part of the answer as a decimal where the equivalent is known recognise 3-digit and 4-digit multiples of 4.
		<ul style="list-style-type: none"> find the mean (average) of groups of values.
		<ul style="list-style-type: none"> mark on given coordinates in all four quadrants work out the mystery coordinates of a vertex of a symmetrical polygon or opposite vertices of a rectangle.
Number and place value (NPV); Fractions, ratio and proportion (FRP); Measurement (MEA);	Revise equivalence, simplifying fractions and changing improper fractions into mixed numbers and vice versa; revise adding and subtracting fractions with different denominators, including those which give answers greater than 1; revise multiplying pairs of fractions and multiplying and dividing fractions by whole numbers; solving problems involving ratios; read intermediate points off scales	<ul style="list-style-type: none"> recognise equivalent fractions simplify fractions write improper fractions as mixed numbers and vice versa.
		<ul style="list-style-type: none"> use equivalence to add and subtract fractions with different denominators, including those which give answers more than 1 work systematically to find all the possible combinations.
		<ul style="list-style-type: none"> divide fractions by whole numbers multiply fractions by whole numbers multiply pairs of fractions.
		<ul style="list-style-type: none"> solve problems involving ratios use scaling up to solve problems.
		<ul style="list-style-type: none"> read intermediate points off a variety of scales.
Geometry: properties of shapes (GPS); Measurement (MEA); Statistics (STA)	Revise properties and classification of 2D shapes, drawing 2D shapes using ruler, protractor and compasses, parts of a circle and angles in polygons; revise calculating missing angles by knowing angle facts; use a protractor to measure and draw angles in degrees; identify and name acute, right, obtuse and reflex angles; understand perimeter, area and volume; find the perimeter of rectangles, find the area of rectangles, parallelograms and triangles, and find the volumes of cubes and cuboids; revise	<ul style="list-style-type: none"> classify, name and describe 2D shapes including details of the properties, e.g. types of angle, similar angles or sides, parts of a circle draw circles using compasses draw polygons using ruler and protractors.
		<ul style="list-style-type: none"> measure angles using a protractor classify angles as acute, right, obtuse or reflex calculate missing angles using knowledge of sum of angles (on a line, round a point, in polygons).
		<ul style="list-style-type: none"> calculate area of rectangles, triangles, parallelograms calculate perimeter of rectangles, triangles, parallelograms and other polygons

	reading and interpreting different types of data display	<ul style="list-style-type: none"> • calculate volume of cuboids and cubes.
<p>Number and place value (NPV); Problem solving, reasoning and algebra (PRA); Geometry: position and direction (GPD); Written multiplication and division (WMD)</p>	<p>Use mathematical reasoning to investigate and solve problems, and to estimate and predict; solve problems using doubling, solve calculations with enormous numbers; find out about famous mathematicians including Brahmagupta and John Napier and use their different methods to multiply; use lattice multiplication to solve multiplications of 2-, 3- and 4-digit numbers; begin to compare historical multiplication methods</p>	<ul style="list-style-type: none"> • read and interpret a timetable, answering questions • calculate time intervals • read and tell the time using analogue, digital and 24-hour clocks, converting between the three different time formats. • read and interpret tables, graphs and charts.
<p>Number and place value (NPV); Problem solving, reasoning and algebra (PRA); Geometry: properties of shapes (GPS)</p>	<p>Explore binary numbers; solve mathematical puzzles; including using multiplication facts, find digital roots and look for patterns; explore Fibonacci sequences and Pythagoras' theorem</p>	<ul style="list-style-type: none"> • double numbers into the millions • use mathematical reasoning to investigate and solve problems. • recognise tessellation and explain what it means • make tessellating patterns. • know how to multiply 3-digit numbers using Brahmagupta's algorithm • recognise the names of some famous mathematicians including Brahmagupta. • know who John Napier was and use his 'bones' to multiply large numbers. • multiply 2-, 3- and 4-digit numbers using the lattice method • compare methods (algorithms) for multiplying numbers with more than 2 digits. • understand that numbers can be represented in different ways • understand how the binary number system works. • solve mathematical puzzles • justify their reasoning. • spot patterns • make and test predictions. • make and test predictions • write and justify a rule. • understand square numbers • test a rule • understand Pythagoras' theorem about the lengths of sides in a right-angled triangle.