Abacus Year 6 Teaching Overview

Autumn 1				
Week	**Strands**	**Weekly summary**	**Main focus**	**Outcomes**
1	Number and place value **(NPV);** Mental multiplication and division **(MMD);** Decimals, percentages and their equivalence to fractions **(DPE);** Fractions, ratio and proportion **(FRP)**	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.	Lesson 1 Read, write and compare 6-digit numbers and know what each digit represents (S: Multiply and divide by 4)	• read, write and compare 6-digit numbers • say what each digit represents in 6-digit numbers.
			Lesson 2 Read, write and compare numbers to six digits and 1- and 2-place decimal numbers and multiply and divide by 10, 100 and 1000 (S: Multiply and divide by 8)	• 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.
			Lesson 3 Read, write and compare 3-place decimal numbers and multiply and divide by 10, 100 and 1000; work and record results systematically (S: Multiply and divide by five)	• 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.
			Lesson 4 Read, write and compare 3-place decimals, round decimals to nearest tenth and whole number and place on a number line (S: Round 3-digit and 4-digit numbers to the nearest 100)	• 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.
			Lesson 5 Read, write and compare decimal numbers to 3 places and convert decimals (up to 3 places) to fractions and vice-versa; demonstrate that they have found all possibilities (S: Convert centimetres to metres and vice versa)	• 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.
2	Mental addition and subtraction (**MAS);** Written addition and subtraction **(WAS);**	Use mental addition strategies to solve additions including decimal numbers; use column addition to add 5-digit numbers,	Lesson 6 Use mental addition strategies to solve additions (S: Telling the time to the nearest minute and simple time intervals)	• choose an appropriate mental strategy to solve addition.
			Lesson 7 Solve addition of 5-digit numbers using column addition (S: Multiply and divide by 10/100/1000)	• add 5-digit numbers using column addition.
			Lesson 8 Add decimal numbers using mental strategies (S:	• add decimal numbers using mental

	Number and place value **(NPV);** Problem solving, reasoning and algebra **(PRA);** Decimals, percentages and their equivalence to fractions **(DPE)**	decimal numbers and amounts of money; solve problems involving number up to 3 decimal places, choose an appropriate method to solve decimal addition.	Round decimal numbers to the nearest whole number)	strategies.
			Lesson 9 Add decimal numbers using column addition, add amounts of money using column addition and solve problems involving number up to 3 decimal places (S: Convert millilitres to litres and litres to millilitres)	• add decimal numbers using column addition • add amounts of money (pounds and pence) using column addition.
			Lesson 10 Choose an appropriate method to solve decimal addition: either mental or written column addition and solve problems involving number up to 3 decimal places (S: Convert grams to kilograms and vice versa)	• choose an appropriate method to add decimal numbers (mental or written) • add decimal numbers using column addition and mental strategies.
3	Problem solving, reasoning and algebra **(PRA);** Mental addition and subtraction **(MAS**)	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.	Lesson 11 Express missing number problems algebraically (one unknown) (S: Multiplying by 10, 100, 1000)	• solve missing number problems where the missing number is given as a letter • use mathematical reasoning to solve problems.
			Lesson 12 Find pairs of numbers that satisfy equations involving two unknowns (S: Divide by 10, 100, 1000)	• find pairs of numbers which fit equations with two unknowns • solve equations with two unknowns if they are given more information to help them.
			Lesson 13 Use trial and improvement to solve equations involving two unknowns and find missing lengths and angles (S: Times tables duel)	• find missing angles and lengths when given sufficient information • solve equations with two unknowns using trial and improvement methods.
			Lesson 14 Understand how brackets can be used in calculation problems, use knowledge of the order of operations to carry out calculations involving the four operations and solve problems involving the four operations and solve problems involving addition, subtraction, multiplication and division (S: Number bonds to 100)	• use their knowledge of the order of operations to carry out calculations involving addition, subtraction, multiplication and division • use brackets in calculations correctly.
			Lesson 15 Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why and use knowledge of the order of operations to solve problems involving addition, subtraction, multiplication and division (S: 24 hour clock)	• say the order in which they have to do operations within a calculation • solve multi-step problems involving addition, subtraction, multiplication or division.
4	Measurement **(MEA);** Problem solving,	Convert between grams and kilograms, millilitres and litres,	Lesson 16 Convert grams to kilograms and vice versa, convert millilitres to litres and vice versa (S: Estimate weights and capacities)	• convert grams to kilograms and vice versa • convert millilitres to litres and vice

	reasoning and algebra **(PRA);** Number and place value **(NPV)**	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.		versa • begin to convert kilograms to tonnes and vice versa.
			Lesson 17 Convert between millimetres and centimetres, between centimetres and metres, and between metres and kilometres (S: Round measures to the nearest whole unit)	• convert between millimetres and centimetres, between centimetres and metres, and between metres and kilometres.
			Lesson 18 Convert miles to kilometres and vice versa (S: Estimate lengths)	• understand that 5 miles is approximately equivalent to 8 kilometres • use this knowledge to work out other equivalent distances.
			Lesson 19 Revise reading the time using the 24-hour format, convert 12-hour am and pm times to 24-hour format, and read and write Roman numerals (S: Tell the time)	• write times given in words or 12-hour format using the 24-hour format • read and write years using Roman numerals.
			Lesson 20 Find time intervals using the 24-hour clock (S: Write years using Roman numerals)	• use counting up to calculate time intervals • count on and back in hours and minutes, bridging the hour to find start and finish times.
5	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.	Lesson 21 Use mental addition strategies to solve subtractions (S: How many to the next multiple of 100 and 1000?)	• choose an appropriate mental strategy to solve subtraction.
			Lesson 22 Solve subtraction of 5-digit numbers using column subtraction (decomposition) (S: Find change from £5)	• subtract 5-digit numbers using column subtraction (decomposition).
			Lesson 23 Subtract decimal numbers using mental strategies (S: Round large numbers to the nearest 100 and 1000)	• subtract decimal numbers using mental strategies (rounding, place value and counting up).
			Lesson 24 Use counting up to solve subtraction of mixed decimal numbers and use mathematical reasoning to investigate (S: Add to the next whole number from 2-place decimals)	• subtract mixed decimal numbers using counting up (Frog) • use mathematical reasoning to investigate.
			Lesson 25 Subtract amounts of money working out how much is left using Frog and solve word problems involving subtraction (S: Locate and rounding decimal numbers)	• solve subtractions involving money using counting up • solve word problems.
6	Mental	Use mental	Lesson 26 Use mental multiplication strategies to multiply by	• use mental multiplication strategies to

	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)**	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.	numbers such as 4, 8, 5, 25, 19, 29 and 99 (S: 25 times-table)	multiply by numbers such as 4, 8, 5, 25, 19, 29 and 99.
			Lesson 27 Revise using short multiplication to multiply 4-digit numbers by 1-digit numbers (S: Mental calculation, using brackets)	• use short multiplication to multiply 4-digit numbers by 1-digit numbers • approximate answers first.
			Lesson 28 Use short multiplication to multiply 4-digit amounts of money, e.g. £46·29 by 1-digit numbers and solve word problems involving multiplication including two-step problems and finding change (S: Find change)	• 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.
			Lesson 29 Use long multiplication to multiply 3- and 4-digit numbers by teens numbers (S: Place value in 5- and 6-digit numbers)	• use long multiplication to multiply 3- and 4-digit numbers by teens numbers • make an approximation.
			Lesson 30 Use long multiplication to multiply 4-digit numbers by teens numbers (S: Times tables)	• use long multiplication to multiply 4-digit numbers by teens numbers • make an approximation.
Autumn 2				
Week	**Strands**	**Weekly summary**	**Main focus**	**Outcomes**
7	Number and place value **(NPV);** Problem solving, reasoning and algebra **(PRA);** Fractions, ratio and proportion **(FRP)**	Understand negative numbers; calculate small differences between negative numbers and negative 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	Lesson 31 Understand negative numbers are numbers less than zero and calculate small differences between negative numbers and negative and positive numbers (on a number line) (S: Multiply and divide by 10, 100 and 1000)	• read, write and order negative numbers • calculate small differences involving positive and negative numbers.
			Lesson 32 Understand negative numbers are numbers less than zero and add and subtract negative numbers (S: Count back in 5s though zero)	• 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.
			Lesson 33 Compare fractions with unlike, but related, denominators, understand fractions are parts of numbers and use the terms fraction, denominator and numerator correctly (S: Equivalent fractions)	• compare simple fractions with different (related) denominators • generate equivalent fractions.
			Lesson 34 Compare fractions with unlike, but related, denominators, understand fractions are parts of numbers and use the terms fraction, denominator and numerator correctly	• compare simple fractions with different (related) denominators • generate equivalent fractions.

		and add fractions with the same denominator, writing the answer as a mixed number	(S: Tell time to the nearest minute and convert times to 24-hour clock)	
			Lesson 35 Understand that a fraction where the numerator is greater than the denominator is called an improper fraction and can be converted to a mixed number (a whole number with a fractional part) and add fractions with the same denominator, writing the answer as a mixed number (S: Count in halves, quarters and thirds)	• convert fractions to mixed numbers • add fractions with the same denominator.
8	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 $A = {}^1/_2 b \times h$; 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.	Lesson 36 Calculate perimeter and know it is measured in cm, m, km, etc., calculate area and know it is measured in cm^2, m^2, km^2, and understand that shapes can have the same perimeters but different areas or the same areas but different perimeters (S: Numbers in the 100 000s)	• 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
			Lesson 37 Calculate area of rectangles and volume of cubes and cuboids, and understand that area is measured in units squared and volume is measured in units cubed (S: Multiply and divide by 10, 100 and 1000)	• 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.
			Lesson 38 Calculate the area of a triangle using the formula $A = {}^1/_2 b \times h$, and understand that area is measured in units squared (S: Bonds to the next 100)	• calculate the area of a triangle using the formula ${}^1/_2 b \times h$ • understand that all triangles are half a rectangle.
			Lesson 39 Find the area of parallelograms using the formula $A = b \times h$ (S: Add to the next £1)	• use the formula $A = b \times h$ to calculate the area of a parallelogram • understand the relationship between a parallelogram and a rectangle.
			Lesson 40 Name and describe properties of 3D shapes, and systematically find and compare nets for different 3D shapes (S: Calculate volume of cuboids using formula $v = l \times w \times h$)	• 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.
9	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.	Lesson 41 Use mental strategies to divide by 2, 4, 8, 5, 20 and 25 (S: Halve areas of rectangles to find areas of triangles)	• use mental strategies to divide by 2, 4, 8, 5, 20 and 25 • understand multiplication and division as inverses of each other.
			Lesson 42 Find non-unit fractions of amounts (S: Division with an answer of 3, 4 and 6)	• find non-unit fractions of amounts mentally.
			Lesson 43 Use short division to divide 3-digit and 4-digit numbers by 1-digit numbers, including those which leave a remainder and express a remainder as fraction (S: Simplify fractions)	• 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.
			Lesson 44 Use short division to divide 4-digit numbers by 1-digit numbers, including those which leave a remainder and express a remainder as fraction, simplifying where possible (S: Mental division)	• divide any 4-digit number by a 1-digit number • express the remainder as a fraction, simplifying where possible.
			Lesson 45 Use short division to divide 4-digit numbers by 1-digit numbers, including those which leave a remainder and express a remainder as fraction, simplifying where possible (S: Mental division with remainders)	• 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.
10	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	Lesson 46 Add unit fractions with different denominators (S: Find equivalent fractions)	• add unit fractions with different denominators.
			Lesson 47 Add unit fractions with different denominators, including mixed numbers (S: Identify equivalent fractions)	• use equivalence to add mixed numbers where the fractions are unit fractions with different denominators.
			Lesson 48 Subtract unit fractions with different denominators, including mixed numbers (S: Equivalent fractions and decimals)	• subtract pairs of unit fractions using equivalence • spot and test a rule.
			Lesson 49 Use mental strategies to find simple percentages of amounts (S: Equivalent fractions and percentages)	• use their knowledge of equivalence between fractions and percentages, and mental strategies to find simple percentages of amounts (whole number answers).

			Lesson 50 Use mental strategies find simple percentages of amounts of money (S: Tell the time and find a time a given number of minutes later)	• 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).
11	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.	Lesson 51 Multiply fractions less than 1 by whole numbers, converting improper fractions to whole numbers (S: Count up in fractions using equivalence)	• multiply fractions less than 1 by whole numbers • convert improper fractions to whole numbers.
			Lesson 52 Multiply fractions less than 1 by whole numbers, converting improper fractions to whole numbers, and use commutativity to multiply fractions by whole numbers in the most efficient way (S: Find fractions of small amounts)	• 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.
			Lesson 53 Divide unit fractions by whole numbers (S: Multiply fractions by 1-digit numbers)	• divide unit fractions by whole numbers.
			Lesson 54 Divide unit fractions by whole numbers, and begin to divide non-unit fractions by whole numbers (S: Use scaling and draw lines of a given length)	• divide unit fractions by whole numbers • begin to divide non-unit fractions by whole numbers.
			Lesson 55 Solve word problems involving fractions (S: Find partners)	• add, subtract, multiply and divide fractions • solve word problems involving fractions.
Spring 1				
Week	**Strands**	**Weekly summary**	**Main focus**	**Outcomes**
12	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	Lesson 56 Read and write numbers with up to 7-digits, understanding what each digit represents (S: Count on and back in 10s, 100s, 1000s from 4-digit numbers)	• read, write, compare and order 7-digit numbers.
			Lesson 57 Read and write numbers with up to 7-digits, understanding what each digit represents (S: Multiply and divide by 10, 100 and 1000)	• read, write, compare and order 7-digit numbers.
			Lesson 58 Read and write numbers with up to 7-digits, understanding what each digit represents and work systematically to find out how many numbers round to 5000000 (S: Place-value)	• read, write, compare and order numbers with 7 digits • locate 7-digit numbers on a line and round to nearest million.
			Lesson 59 Solve subtraction of 5- and 6-digit numbers using	• use column subtraction to subtract 5-

		written column method (decomposition).	a written column method (decomposition) (S: Rehearse 11 and 12 times-tables and use facts to work out 110, 120, 1100 and 1200 times-tables)	and 6-digit number subtractions • solve subtractions of 5- and 6-digit numbers.
			Lesson 60 Solve subtraction of 6- and 7-digit numbers using written column method (decomposition) (S: Calculate the volume of cuboids using the formula l × w × h)	• use column subtraction to subtract 5- & 6-digit number subtractions • solve subtractions of 5- & 6-digit numbers.
13	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.	Lesson 61 Multiply and divide by 10, 100 and 1000 (S: Multiply and divide by 10)	• multiply and divide by 10, 100 and 1000 • understand what each digit represents in numbers with three decimal places.
			Lesson 62 Compare and order numbers with up to three decimal places (S: Convert metres to kilometres and vice versa)	• compare and order numbers with 1, 2, or 3 decimal places • write a number between any pair with 0, 1 or 2 decimal places.
			Lesson 63 Know common fraction / decimal equivalents, e.g. 3/8 = 0·375 (S: Know simple fraction / decimal equivalents)	• identify common equivalent fractions and decimals, e.g. 1/8s • place numbers with 2 decimal place on a 0 to 1 line.
			Lesson 64 Multiply pairs of unit fractions (S: Factors)	• multiply pairs of unit fractions by reading the × sign as 'of'.
			Lesson 65 Multiply unit fractions by non-unit fractions (S: Multiples)	• multiply unit fractions by non-unit fractions e.g., ½ × 2/3 by multiplying the numerator and the denominators.
14	Mental multiplication and division **(MMD);** Written multiplication and division **(WMD);** Problem solving, reasoning and algebra **(PRA);** Number and place value	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	Lesson 66 Use partitioning to mentally multiply 2-digit numbers with one decimal place by whole 1-digit numbers (S: 0·7 and 0·8 times-tables)	• use mental strategies to multiply 2-digit numbers with one decimal place by single-digit whole numbers.
			Lesson 67 Multiply numbers with two decimal places by 1-digit numbers using short multiplication and multiplying and dividing by 100 (S: Divide by 100)	• 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.
			Lesson 68 Use short multiplication to multiply amounts of money and use estimation to check answers to calculations (S: All times-tables to 12 × 12)	• use short multiplication to multiply 4-digit amounts of money by single digit numbers, e.g. 5 × £98·76

	(NPV)	multiplication to multiply 3-digit and 4-digit numbers by numbers between 10 and 30.		• make approximations.
			Lesson 69 Use long multiplication to multiply 3-digit and 4-digit numbers by numbers between 10 and 30 (S: Multiplying by 20)	• use long multiplication to multiply 3-digit and 4-digit numbers by numbers between 10 and 30.
			Lesson 70 Use long multiplication to multiply 3-digit and 4-digit numbers by numbers between 10 and 30 (S: Multiples and factors)	• use long multiplication to multiply 4-digit numbers by numbers between 10 and 30 • make an approximation.
15	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	Lesson 71 Name, classify and identify properties of quadrilaterals, and explore how diagonal lines can bisect quadrilaterals (S: Recognise, name and sort 2D shapes)	• name and classify quadrilaterals according to their properties • begin to know how diagonal lines bisect quadrilaterals • draw accurate shapes and diagonal lines.
			Lesson 72 Understand what an angle is and that it is measured in degrees (°), know that the angles of a triangle add to 180° and the angles of a quadrilateral add to 360°, and use these facts to calculate missing angles (S: Multiply and divide by 4 and 8 using doubling and halving)	• 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.
			Understand what an angle is and that it is measured in degrees (°), know what the angles of pentagons, hexagons and octagons add to, and use these facts and mathematical reasoning to calculate missing angles (S: Convert between units of capacity)	• 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 • use mathematical reasoning to calculate missing angles.
			Lesson 74 Recognise and identify the properties of circles, and name their parts (S: Count on and back in 3s and derive multiples of 30, 300 and 3000)	• draw a circle using a pair of compasses • identify parts of a circle.
			Lesson 75 Name parts of a circle, draw circles using pairs of compasses, and draw polygons using a ruler and a protractor (S: Calculate the area of triangles using 1/2 b × h)	• draw 2D shapes accurately using ruler, protractor and pairs of compasses • identify parts of a circle.
16	Mental addition	Add and subtract	Lesson 76 Add numbers mentally using mental strategies,	• use mental strategies (including place

	and subtraction (**MAS);** Number and place value **(NPV);** Written addition and subtraction **(WAS);** Problem solving, reasoning and algebra **(PRA)**	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	e.g. rounding, partitioning, place value, etc. (S: Add two 2-digit numbers)	value, rounding, using number facts and partitioning) to add numbers.
			Lesson 77 Subtract numbers mentally using mental strategies, e.g. rounding, partitioning, place value, number bonds, etc. (S: Calculate change from £10 and £20)	• solve subtractions using mental strategies, e.g. rounding, place value, quick counting up, etc.
			Lesson 78 Solve addition of 4- to 7-digit numbers using written column addition, identify patterns in the number of steps required to generate palindromic numbers (S: Multiply and divide by 10/100/1000)	• 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.
			Lesson 79 Solve subtraction of 5-, 6- and 7-digit numbers using written column method (decomposition) (S: Bonds to 100 bingo)	• use column subtraction to subtract 6- and 7-digit numbers.
			Lesson 80 Solve additions and subtractions choosing mental strategies or written procedures as appropriate; read, understand and solve word problems (S: Find area and perimeter of rectilinear shapes)	• use column addition and subtraction to solve problems • use mental strategies to solve problems • decide on an appropriate strategy to solve addition and subtraction.
17	Written multiplication and division **(WMD);** Number and place value **(NPV);** Problem solving, reasoning and algebra **(PRA)**	Identity 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	Lesson 81 Identity common factors and common multiples (S: Times tables bingo)	• identify common factors and multiples. • identify the highest common factor and the lowest common multiple.
			Lesson 82 Understand that a prime number has exactly two factors, find prime numbers less than 100 and understand what a composite (non-prime) number is (S: Factor pairs with exactly two pairs of factors)	• identify prime numbers up to 100 • make and test general statements.
			Lesson 83 Use short division to divide 4-digit numbers by single-digit numbers including those which leave a remainder and investigate and explore patterns (S: Division facts)	• 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.
			Lesson 84 Use long division to divide 3-digit numbers by 2-digit numbers, giving remainders as a fraction, simplifying where possible (S: Mental division)	• use long division to divide 3-digit numbers by 2-digit numbers. • make an estimate using multiples of ten of the divisor.

			Lesson 85 Use long division to divide 4-digit numbers by 2-digit numbers, giving remainders as a fraction, simplifying where possible (S: Find and tell a time)	• use long division to divide 4-digit numbers by two-digit numbers. • make an estimate using multiples of 10 and 100 of the divisor.
Spring 2				
Week	**Strands**	**Weekly summary**	**Main focus**	**Outcomes**
18	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	Lesson 86 Solve addition and subtraction multi-step problems in shopping contexts, and add and subtract money using column addition and counting up (S: Tell the time using the 24-hour clock)	• 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.
			Lesson 87 Add decimal numbers choosing an appropriate strategy (mental strategy or column addition), and add decimal numbers with different numbers of places using column addition (S: Bonds to 1)	• add decimal numbers with different numbers of places using column addition • add decimal numbers with different numbers of places using mental strategies.
			Lesson 88 Use mathematical reasoning to investigate and solve problems, and solve subtractions of decimal numbers with different numbers of places (2-places) using counting up (S: Calculate fractions of amounts)	• solve subtractions of 2-place decimal numbers • use mathematical reasoning to investigate and solve problems.
			Lesson 89 Choose appropriate methods to add and subtract decimal numbers (S: Adding and subtraction fractions (with similar denominators))	• use a variety of methods to add and subtract decimal numbers • choose an appropriate strategy mental or written to solve calculations.
			Lesson 90 Solve multi-step problems involving addition and subtraction of decimals and money, in context (S: Calculate time intervals)	• solve multi-step problems involving addition and subtraction of decimals and money in context • choose the most appropriate method to add and subtract decimal numbers.
19	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	Lesson 91 Calculate the mean average and understand what it represents (S: Acute, obtuse and reflex angles)	• calculate mean average from sets of simple data • begin to understand mathematical concept of mean average and use to make comparisons.
			Lesson 92 Construct and interpret distance/time line graphs where intermediate points have meaning (S: Calculate time	• draw, read and interpret line graphs • children can read and interpret

		have meaning, including conversion line graphs; understand pie charts are a way of representing data using percentages, interpret and construct pie charts	intervals)	distance time graphs, understanding a flat horizontal line represents a break/rest and the steeper the line the faster the speed.
			Lesson 93 Construct and interpret line graphs where intermediate points have meaning, including conversion line graphs (S: Calculate angles round a point)	• draw, read and interpret line graphs • understand and use a conversion graph to convert measures, e.g. miles to km, centimetres to inches.
			Lesson 94 Understand pie charts are a way of representing data using percentages, begin to interpret and construct pie charts (S: Decimal, percentage and fraction equivalents)	• understand the concept of a pie chart • read and interpret a pie-chart.
			Lesson 95 Interpret and begin to construct pie charts, understand pie charts are a way of representing data using percentages (S: Calculate percentages and convert to angles)	• read and interpret a pie chart • begin to construct a pie chart.
20	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	Lesson 96 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 (S: Round decimals to the nearest tenth)	• 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.
			Lesson 97 Read and plot coordinates in all four quadrants and draw and reflect simple polygons in both the x-axis and the y-axis using coordinates (S: 2-place decimal complements to 1)	• 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.
			Lesson 98 Read and plot coordinates in all four quadrants, draw and reflect simple polygons in both the x-axis and the y-axis and translate simple polygons (S: Place 6-digit numbers on a line and round to the nearest 100 000)	• 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.
			Lesson 99 Find unknown angles around a point, on a line, in a triangle or vertically opposite (S: Add and subtract negative	• measure angles using a protractor • find missing angles round a point or on

			numbers in the context of temperature)	a straight line • find a missing angle in a triangle.
			Lesson 100 Find unknown angles around a point, on a line, in a triangle or vertically opposite and in polygons where diagonals intersect (S: Rehearse finding missing angles in a triangle)	• 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.
21	Written multiplication and division **(WMD);** Problem solving, reasoning and algebra **(PRA)**	Multiply 4-digit numbers including those with two decimal places by 1-digit numbers; use long 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	Lesson 101 Multiply 4-digit numbers including those with two decimal places by 1-digit numbers (S: Multiply and divide by 10, 100 and 1000)	• 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.
			Lesson 102 Use long multiplication to multiply 4-digit numbers by numbers between 10 and 30, including those with two decimal places (S: Multiply pairs for fractions)	• 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.
			Lesson 103 Revise using short division to divide 4-digit numbers by 1-digit numbers including those which leave a remainder, and divide the remainder by the divisor to give a fraction (S:12 times-table)	• 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.
			Lesson 104 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, and make approximations (S: 26 times-table)	• 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.
			Lesson 105 Use long division to divide 4-digit numbers by 2-digit numbers, and use a systematic approach to solve problems (S: Divide unit fractions by whole numbers)	• use long division to divide 4-digit numbers by 2-digit numbers • use a systematic approach to solve problems involving multiplication and

				division.
22	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	Lesson 106 Generalise a relationship between pairs of numbers, express simple formulae in words, then using letters (S: Work out missing functions)	• 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.
			Lesson 107 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 (S: Count back in steps of a constant size)	• 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.
			Lesson 108 Describe and continue linear sequences, generalise to predict the tenth number, begin to generalise a number in a sequence using *n* to stand for the number in the sequence (S: Generalise relationships between numbers)	• 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.
			Lesson 109 Describe ratio and use ratio to solve problems (S: Mental algebra)	• identify ratios • solve problems involving simple ratios.
			Lesson 110 Find fractions and simplify ratios (S: Fractions of amounts)	• identify ratios between quantities. • use ratio to solve problems, e.g. scaling up and down ingredients for a recipe.
Summer 1				
Week	**Strands**	**Weekly summary**	**Main focus**	**Outcomes**
23	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	Lesson 111 Revise reading, writing, comparing and ordering numbers with up to seven digits understanding what each digit represents (S: 24-hour clock time)	• read, write, compare and order 7-digit numbers • understand place value in 6- and 7-digit numbers.
			Lesson 112 Revise reading, writing, comparing and ordering decimal numbers with up to three decimal places, understanding what each digit represents (S: Convert litres, centilitres and millilitres)	• read, write, compare and order decimal numbers with up to three decimal places.
			Lesson 113 Revise reading and writing numbers with up to seven digits and three decimal places, understanding what each digit represents and revise multiplying and dividing by multiples of ten, understanding what happens to the digits in a	• multiple and divide by 10,100, 1000 and 1/10 • understand that multiplying and dividing by multiples of 10 involves

		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 calculating differences between negative numbers and positive and negative numbers	number, i.e. they move places left or right to get bigger or smaller (S: Convert units of weight (grams and kilograms))	moving the digits of a number a certain number of places to the left or right.
			Lesson 114 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 and revise locating a number on a number line marking numbers it lies between (S: Add 1000, 100, 10, 1, 0·1, 0·01, etc. to any number)	• use a number line to locate and round decimal numbers and large numbers • round decimals to the nearest tenth and whole • round big numbers to the nearest 1000.
			Lesson 115 Revise comparing and ordering negative numbers including calculating differences between negative numbers and positive and negative numbers (S: Multiply by powers of ten)	• compare and order positive and negative numbers.
24	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)**	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	Lesson 116 Revise adding and subtracting whole numbers using mental and written methods (S: Know division facts for times-tables)	• solve additions and subtractions of whole numbers, choosing an appropriate method.
			Lesson 117 Revise adding and subtracting decimal numbers using mental and written methods (S: Division with remainders expressed as fractions)	• solve additions and subtractions of decimal numbers, choosing an appropriate method.
			Lesson 118 Revise finding percentages of numbers, converting fractions, decimals and percentages and making comparisons using percentages (S: Equivalent fractions, decimals and percentages)	• calculate percentages and compare them • calculate numbers from percentages and compare them.
			Lesson 119 Revise how brackets can be used in calculation problems, revise knowledge of the order of operations to carry out calculations involving the four operations, and revise solving missing number problems using inverse operations (S: Calculate time intervals using 24 hour clock)	• use brackets and order of operations to solve calculations • find an unknown number using inverse operations.
			Lesson 120 Revise using trial and improvement to solve equations involving one or two unknowns, and find missing lengths and angles (S: Calculate areas of triangles)	• solve equations with one unknown quantity • solve equations with two unknown quantities • find missing lengths and angles in shapes.

		improvement to solve equations involving one or two unknowns, and find missing lengths and angles		
25	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)**	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	Lesson 121 Revise scaling, using mental strategies for multiplying and dividing (S: Using brackets and order of operations)	• solve problems involving scale • use mental strategies to multiply and divide.
			Lesson 122 Revise solving problems involving rate (S: Count in 3s)	• solve problems involving rate.
			Lesson 123 Revise multiplying pairs of 2-digit numbers and finding factors of 2-digit numbers (S: Multiples and factors)	• find factors of 2-digit numbers • find highest common factor and lowest common multiple • multiply pairs of 2-digit numbers together.
			Lesson 124 Multiply 3-digit and 4-digit numbers including decimals by whole single-digit numbers and solve word problems involving multiplication of money and measures (S: Multiplication facts)	• 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.
			Lesson 125 Use a systematic approach to solve problems involving multiplication and division, including long multiplication of 3-digit and 4-digit numbers and decimals (S: Mental divisions)	• 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.
26	Written multiplication and division **(WMD);** Problem solving, reasoning and	Revise using short division to find unit fractions of amounts, including decimals, and round answers to money problems	Lesson 126 Revise using short division to find unit fractions of amounts, including decimals and round answers to money problems according to the context (S: Find non-unit fractions of easy amounts)	• 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 carry out the division without the decimal point

	algebra **(PRA);** Number and place value **(NPV);** Statistics **(STA);** Geometry: position and direction **(GPD)**	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		• estimate answers • show their workings clearly • solve money problems that require answers to be rounded
			Lesson 127 Revise using long division to divide whole 4-digit numbers by 2-digit numbers, dividing any remainders by the divisor to give a fraction, simplifying where possible and rounding up or down according to the context (S: 15 and 24 times-tables)	• 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.
			Lesson 128 Revise using 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 equivalents are known (S: Division facts up to 12 × 12)	• 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.
			Lesson 129 Revise calculating the mean average (S: Conversion of metric units: weight and capacity)	• find the mean (average) of groups of values.
			Lesson 130 Revise reading and marking coordinates in all four quadrants, draw simple polygons using coordinates and find missing coordinates for a vertex on a polygon or on a line (S: Count in 25s)	• 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.
Summer 2				
Week	**Strands**	**Weekly summary**	**Main focus**	**Outcomes**
27	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	Lesson 131 Revise equivalence, simplifying fractions and changing improper fractions into mixed numbers and vice versa (S: Writing numbers using Roman numerals)	• recognise equivalent fractions • simplify fractions • write improper fractions as mixed numbers and vice versa.
			Lesson 132 Revise adding and subtracting fractions with different denominators, including those which give answers greater than 1 (S: Simple divisions with remainders as fractions)	• 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.

		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	Lesson 133 Revise multiplying pairs of fractions and multiplying and dividing fractions by whole numbers (S: Percentage, decimal and fraction equivalents)	• divide fractions by whole numbers • multiply fractions by whole numbers • multiply pairs of fractions.
			Lesson 134 Solving problems involving ratios (S: Conversion of metric units of length)	• solve problems involving ratios • use scaling up to solve problems.
			Lesson 135 Read intermediate points off scales (S: Calculate time intervals using the 24-hour clock)	• read intermediate points off a variety of scales.
28	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 reading and	Lesson 136 Revise properties and classification of 2D shapes, revise drawing 2D shapes using ruler, protractor and compasses (for circles), and revise parts of a circle and angles in polygons (S: Simplify fractions)	• 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.
			Lesson 137 Revise calculating missing angles by knowing angle facts, know that angles are measured in degrees (°), use a protractor to measure and draw angles in degrees, and identify and name acute, right, obtuse and reflex angles (S: Recognise equivalent decimals, fractions and percentages)	• 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).
			Lesson 138 Understand the concepts of perimeter, area and volume, measure or calculate the perimeter of rectangles including composite shapes and regular polygons, find the area of rectangles, parallelograms and triangles, and find the volumes of cubes and cuboids (S: Convert between miles and kilometres)	• calculate area of rectangles, triangles, parallelograms • calculate perimeter of rectangles, triangles, parallelograms and other polygons • calculate volume of cuboids and cubes.
			Lesson 139 Revise 24-hour clock and calculating time intervals, and revise reading and solving problems using timetables (S: Use mental multiplication and division strategies)	• 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.

		interpreting different types of data display	Lesson 140 Revise reading and interpreting different types of data display, and ask and answer questions relating to data displayed in a graph/chart (S: Revise order of operations)	• read and interpret tables, graphs and charts.
29	Number and place value **(NPV);** Problem solving, reasoning and algebra **(PRA);** Geometry: position and direction **(GPD);** Written multiplication and division **(WMD)**	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	Lesson 141 Use mathematical reasoning to investigate and solve problems, solve problems using doubling, solve calculations with enormous numbers and estimate and predict using mathematical knowledge (S: Big number Bingo)	• double numbers into the millions • use mathematical reasoning to investigate and solve problems.
			Lesson 142 Recognise and use the term tessellate and begin to relate to knowledge of 2D shapes and angles and use knowledge of geometry to make tessellating patterns (S: Use x, ÷, +, - to make a number)	• recognise tessellation and explain what it means • make tessellating patterns.
			Lesson 143 Find out about famous mathematicians including Brahmagupta (famous 7th century Indian mathematician) and use different methods to multiply (S: Time game)	• know how to multiply 3-digit numbers using Brahmagupta's algorithm • recognise the names of some famous mathematicians including Brahmagupta.
			Lesson 144 Know John Napier was a famous mathematician and use his 'bones' to solve multiplications (S: Count on and back in multiples of 3)	• know who John Napier was and use his 'bones' to multiply large numbers.
			Lesson 145 Use lattice multiplication to solve multiplications of 2-, 3-, and 4-digit numbers and begin to compare historical multiplication methods (S: Calculate the area of triangles using 1/2 b × h)	• multiply 2-, 3- and 4-digit numbers using the lattice method • compare methods (algorithms) for multiplying numbers with more than 2 digits.
30	Number and place value **(NPV);** Problem solving, reasoning and algebra **(PRA);** Geometry: properties of shapes **(GPS)**	Explore binary numbers; solve mathematical puzzles; including using multiplication facts, find digital roots and look for patterns; explore Fibonacci sequences and Pythagoras' theorem	Lesson 146 Explore binary numbers (S: Japanese numbers)	• understand that numbers can be represented in different ways • understand how the binary number system works.
			Lesson 147 Solve mathematical puzzles (S: Mental arithmetic: all four operations)	• solve mathematical puzzles • justify their reasoning.
			Lesson 148 Use multiplication facts to solve puzzles, find digital roots and look for patterns (S: Multiplication facts)	• spot patterns • make and test predictions.
			Lesson 149 Explore Fibonacci sequences (S: Identify linear sequences)	• make and test predictions • write and justify a rule.
			Lesson 150 Explore Pythagoras' theorem (S: Square numbers)	• understand square numbers • test a rule • understand Pythagoras' theorem

				about the lengths of sides in a right-angled triangle.