



Northcote Primary School
Year 6 Mathematics Overview



This overview outlines the coverage for Year 6. The curriculum will be adapted to meet the needs of the children in each class to ensure that all learners are supported and challenged. A variety of reasoning and problem-solving opportunities are provided each week.

Year 6, Autumn Term 1

Wk Strands

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| 1 | NPV Number and place value; MMD Mental multiplication and division; DPE Decimals, percentages and their equivalence to fractions; FRP Fractions, ratio and proportion |
| 2 | MAS Mental addition and subtraction; NPV Number and place value; WAS Written addition and subtraction; DPE Decimals, percentages and their equivalence to fractions; PRA Problem solving, reasoning and algebra |
| 3 | PRA Problem solving, reasoning and algebra; MAS Mental addition and subtraction |
| 4 | MEA Measurement; PRA Problem solving, reasoning and algebra; NPV Number and place value |

Progression Focus

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| Place value; addition |
| Weeks 1 and 2 focus on establishing a robust understanding of place value in relation to whole numbers and decimals, which is then used in written methods and mental strategies in addition. |
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| Algebra |
| Week 3 focuses on algebra – developing the use of trial and improvement methods, knowledge of the order of operations including brackets, and the manipulation of sentences containing unknowns. |
| Measures |
| Week 4 focuses on measurement in and conversion of SI and imperial units; it also covers the use of 24-hour clock and calculation of time intervals. |

Weekly Summary

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| 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. |
| 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. |
| 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. |
| 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. |



5	MAS Mental addition and subtraction; WAS Written addition and subtraction; NPV Number and place value; PRA Problem solving, reasoning and algebra	Subtraction Week 5 focuses on mental strategies and written methods in subtracting and the appropriate use of both with whole and decimal numbers, including money.	Use mental addition, column subtraction and Counting up to solve subtractions of amounts of money and word problems; use mathematical reasoning to investigate.
6	MMD Mental multiplication and division; WMD Written multiplication and division; MAS Mental addition and subtraction; PRA Problem solving, reasoning and algebra; NPV Number and place value	Multiplication Week 6 focuses on mental strategies and written methods in multiplying; both long and short multiplication are rehearsed, alongside a range of mental tactics.	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.

Year 6, Autumn Term 2

Wk	Strands	Progression Focus	Weekly Summary
7	NPV Number and place value; PRA Problem solving, reasoning and algebra; FRP Fractions, ratio and proportion	Negative numbers; fractions Week 7 focuses on positive and negative whole numbers, and then comparing, ordering, adding and subtracting fractions, including mixed numbers.	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 and add fractions with the same denominator, writing the answer as a mixed number
8	MEA Measurement; GPS Geometry: properties of shapes	Shape, and measurement in relation to shape Week 8 focuses on 2D shapes, their properties, areas, and perimeters, and 3D shapes, their nets, volumes and properties.	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.
9	MMD Mental multiplication and division; FRP Fractions, ratio and proportion; WMD Written multiplication and division; PRA Problem solving, reasoning and algebra	Division; fractions and percentages Weeks 9, 10 and 11 focus on division and fractions; children rehearse mental strategies and short division, giving remainders as fractions; fractions are added, subtracted, multiplied and divided; finding percentages is also covered.	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.
10	FRP Fractions, ratio and proportion; PRA Problem solving, reasoning and algebra; DPE Decimals, percentages and their equivalence to fractions	Division; fractions and percentages Weeks 9, 10 and 11 focus on division and fractions; children rehearse mental strategies and short division, giving remainders as fractions; fractions are added, subtracted, multiplied and divided; finding percentages is also covered.	Add and subtract unit fractions with different denominators including mixed numbers; use mental strategies to find simple percentages of amounts, including money



11	FRP Fractions, ratio and proportion	Division; fractions and percentages Weeks 9, 10 and 11 focus on division and fractions; children rehearse mental strategies and short division, giving remainders as fractions; fractions are added, subtracted, multiplied and divided; finding percentages is also covered.	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.
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Year 6, Spring Term 1

Wk	Strands	Progression Focus	Weekly Summary
12	NPV Number and place value; WAS Written addition and subtraction	Place value; subtraction Week 12 focuses on a robust understanding of place value in large numbers, which underpins the subtraction work that follows.	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).
13	DPE Decimals, percentages and their equivalence to fractions; FRP Fractions, ratio and proportion	Multiplication of decimals and fractions Weeks 13 and 14 focus on understanding decimal and proper fractions and their equivalences; calculations including multiplication of these numbers are rehearsed.	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
14	MMD Mental multiplication and division; WMD Written multiplication and division; PRA Problem solving, reasoning and algebra; NPV Number and place value	Multiplication of decimals and fractions Weeks 13 and 14 focus on understanding decimal and proper fractions and their equivalences; calculations including multiplication of these numbers are rehearsed.	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.
15	GPS Geometry: properties of shapes; PRA Problem solving, reasoning and algebra	2D shapes; angles Week 15 focuses on 2D shapes, particularly quadrilaterals, in relation to their diagonals and interior angles; circles are also taught, along with relevant terminology.	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
16	MAS Mental addition and subtraction; NPV Number and place value; WAS Written addition and subtraction; PRA Problem solving, reasoning and algebra	Addition and subtraction Week 16 focuses on mental and written addition and subtraction methods, including solving word problems.	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



17	WMD Written multiplication and division; NPV Number and place value; PRA Problem solving, reasoning and algebra	Multiplication and division Week 17 focuses on number patterns involving factors and multiples, and on long division.	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
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Year 6, Spring Term 2

Wk	Strands	Progression Focus	Weekly Summary
18	MAS Mental addition and subtraction; WAS Written addition and subtraction; PRA Problem solving, reasoning and algebra	Addition and subtraction Week 18 focuses on solving addition and subtraction problems involving money and decimals.	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
19	STA Statistics; DPE Decimals, percentages and their equivalence to fractions	Statistics and data Week 19 focuses on data representation and manipulation, including line graphs, pie charts and the use and calculation of averages.	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
20	GPD Geometry: position and direction; NPV Number and place value; PRA Problem solving, reasoning and algebra; GPS Geometry: properties of shapes	Coordinate geometry; angles Week 20 focuses on position on a 4-quadrant coordinate grid, with polygons being plotted, translated and reflected; the week concludes with angle theorems.	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
21	WMD Written multiplication and division; PRA Problem solving, reasoning and algebra	Multiplication and division Week 21 focuses on the use of written algorithms in multiplying and dividing large numbers; both long and short versions of these methods are taught.	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
22	PRA Problem solving, reasoning and algebra; FRP Fractions, ratio and proportion	Algebra; ratio Week 22 focuses on the use of generalisations and simple formula, including to find the nth term in a sequence; then moves on to ratio.	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



Year 6, Summer Term 1

Wk Strands

- 23 **NPV** Number and place value; **DPE** Decimals, percentages and their equivalence to fractions
- 24 **NPV** Number and place value; **MAS** Mental addition and subtraction; **WAS** Written addition and subtraction; **DPE** Decimals, percentages and their equivalence to fractions; **FRP** Fractions, ratio and proportion; **PRA** Problem solving, reasoning and algebra; **GPS** Geometry: properties of shapes
- 25 **MAS** Mental addition and subtraction; **FRP** Fractions, ratio and proportion; **WMD** Written multiplication and division; **MMD** Mental multiplication and division; **PRA** Problem solving, reasoning and algebra; **NPV** Number and place value
- 26 **WMD** Written multiplication and division; **PRA** Problem solving, reasoning and algebra; **NPV** Number and place value; **STA** Statistics; **GPD** Geometry: position and direction

Progression Focus

Revision: place value and decimals

Week 23 focuses on revision of place value in large numbers and in decimal fractions.

Revision

Week 24 focuses on revision of: mental and written strategies in addition and subtraction; finding percentages; order of operations; and finding unknowns in equations.

Revision: multiplication and division

Weeks 25 and 26 focus on revision of: written algorithms for multiplication and division and mental strategies including the use of factors; finding fractions of amounts; and calculating mean average.

Revision: multiplication and division

Weeks 25 and 26 focus on revision of: written algorithms for multiplication and division and mental strategies including the use of factors; finding fractions of amounts; and calculating mean average.

Weekly Summary

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 calculating differences between negative numbers and positive and negative numbers

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

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

Revise using short division to find unit fractions of amounts, including decimals, and round answers to 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

Year 6, Summer Term 2

Wk Strands

Progression Focus

Weekly Summary



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27	NPV Number and place value; FRP Fractions, ratio and proportion; MEA Measurement	Revision: fractions; ratio Week 27 focuses on revision of: equivalence in fractions; and using this to add, subtract, multiply and divide fractions; and solving ratio problems.	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
28	GPS Geometry: properties of shapes; MEA Measurement; STA Statistics	Revision Week 28 focuses on revision of: properties of 2D shapes; angle types and theorems; perimeter, area and volume; 24-hour clock time intervals; and tables, graphs and charts.	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 interpreting different types of data display
29	NPV Number and place value; PRA Problem solving, reasoning and algebra; GPD Geometry: position and direction; WMD Written multiplication and division	Further mathematical ideas Weeks 29 and 30 focus on exploration of a variety of interesting mathematical concepts and processes, including binary numbers and Napier's bones; playing with numbers, discovering patterns and solving mathematical puzzles.	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
30	NPV Number and place value; PRA Problem solving, reasoning and algebra; GPS Geometry: properties of shapes	Further mathematical ideas Weeks 29 and 30 focus on exploration of a variety of interesting mathematical concepts and processes, including binary numbers and Napier's bones; playing with numbers, discovering patterns and solving mathematical puzzles.	Explore binary numbers; solve mathematical puzzles; including using multiplication facts, find digital roots and look for patterns; explore Fibonacci sequences and Pythagoras' theorem

