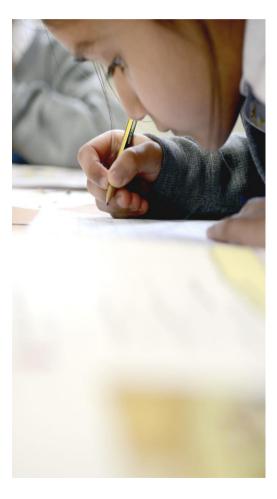# Stanley Grove Primary Academy

# Year 6 Maths Overview

# Year 6 Scheme of Work

Maths — No Problem! is a comprehensive series that adopts a spiral design with carefully built-up mathematical concepts and processes adapted from the maths mastery approaches used in Singapore. The Concrete-Pictorial-Abstract (C-P-A) approach forms an integral part of the learning process through the materials developed for this series.
Maths — No Problem! incorporates the use of concrete aids and manipulatives, problem-solving and group work.

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| **Textbook 6A** | **Chapter 1 – Numbers to 10 Million** | Lesson 1 – Reading and Writing Numbers to 10 Million: To create and identify numbers to 10 000 000; to write in numerals and words numbers to 10 000 000. |
| | | Lesson 2 – Reading and Writing Numbers to 10 Million: To construct and record numbers to 10 000 000; to recognise the value of digits to 10 000 000. |
| | | Lesson 3 – Reading and Writing Numbers to 10 Million: To recognise and construct numbers to 10 000 000 using an abacus; to recognise the value of digits in numbers to 10 000 000 and write numbers using numerals and words. |
| | | Lesson 4 – Comparing Numbers to 10 Million: To compare numbers to 10 000 000 using place value. |
| | | Lesson 5 – Comparing and Ordering Numbers to 10 Million: To compare and order numbers to 10 000 000; to create combinations of numbers using a fixed number of digits. |
| | | Lesson 6 – Rounding Numbers: To round numbers to 10 000 000 to the nearest million, hundred thousand and ten thousand. |
| | | Lesson 7 – Rounding Numbers: To round numbers to the nearest appropriate number up to and including millions; to determine when rounding is appropriate and to which value. |
| | | Lesson 8 – Chapter Consolidation |
| | **Chapter 2 – Four Operations on Whole Numbers** | Lesson 1 – Using Mixed Operations: To use multiple operations and create expressions from a picture; to use the order of operations to solve expressions. |
| | | Lesson 2 – Using Mixed Operations: To create and solve expressions using the four operations. |
| | | Lesson 3 – Multiplying by 2-Digit Numbers: To multiply numbers by multiples of 10; to use number bonds as a key strategy in multiplication. |
| | | Lesson 4 – Multiplying by 2-Digit Numbers: To multiply 3- and 4-digit numbers by 2-digit numbers without regrouping or renaming; to use both number bonds and the column method as key strategies. |
| | | Lesson 5 – Multiplying by 2-Digit Numbers: To multiply 3- and 4-digit numbers by 2-digit numbers without regrouping or renaming; to use both number bonds and the column method as key strategies. |
| | | Lesson 6 – Multiplying by 2-Digit Numbers: To multiply 3- and 4-digit numbers by 2-digit numbers with regrouping and renaming; to use number bonds and pattern recognition as key strategies for multiplication. |
| | | Lesson 7 – Multiplying by 2-Digit Numbers: To multiply 3- and 4-digit numbers by 2-digit numbers with regrouping and renaming; to use number bonds and the column method as key strategies. |
| | | Lesson 8 – Estimating Products of Large Numbers: To estimate products of multiplying 3- and 4-digit numbers by 2-digit numbers; to use knowledge of multiplication to create specific products. |
| | | Lesson 9 – Dividing by 2-Digit Numbers: To divide 3-digit numbers by 2-digit numbers using a variety of strategies; to use number bonds, long division and bar models to facilitate division by 2-digit numbers. |
| | | Lesson 10 – Dividing by 2-Digit Numbers: To divide 4-digit numbers by 2-digit numbers; to use number bonds and long division as the key strategies. |
| | | Lesson 11 – Dividing by 2-Digit Numbers: To divide 4-digit numbers by 2-digit numbers using a variety of methods; to use number bonds, long and short division as key methods. |

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| **Textbook 6A** | **Chapter 2 – Four Operations on Whole Numbers** | Lesson 12 – Dividing by 2-Digit Numbers: To divide 3-digit numbers by 2-digit numbers giving rise to remainders; to use number bonds, long and short division as key strategies to solve division problems.<br>Lesson 13 – Dividing by 2-Digit Numbers: To divide 4-digit numbers by 2-digit numbers giving rise to a remainder; to represent the remainder as part of a whole amount of money or decimal.<br>Lesson 14 – Solving Word Problems: To use the bar model heuristic to solve word problems involving multiplication and division.<br>Lesson 15 – Solving Word Problems: To solve word problems using division as the main strategy; using pictorial representations to support word problems.<br>Lesson 16 – Solving Word Problems: To solve word problems involving multiple operations, including multiplication and division.<br>Lesson 17 – Finding Common Multiples: To find common multiples in real-life situations; to use common multiples in tandem with knowledge of time.<br>Lesson 18 – Finding Common Multiples: To use common multiples to solve problems; to organise mathematical thinking into tables and lists.<br>Lesson 19 – Finding Common Factors: To find the largest common factor of 3-digit numbers; to use multiplication and division to find largest common factors.<br>Lesson 20 – Finding Common Factors: To find common factors using concrete materials.<br>Lesson 21 – Finding Prime Numbers: To use prime numbers to create other numbers; to explore prime numbers above 100.<br>Lesson 22 – Finding Prime Numbers: To explore prime numbers using concrete materials; to identify prime numbers using multiplication or division.<br>Lesson 23 – Chapter Consolidation |
| | **Chapter 3 – Fractions** | Lesson 1 – Simplifying Fractions: To use concrete materials to simplify fractions; to recognise equivalence in fractions to 1/4.<br>Lesson 2 – Simplifying Fractions: To simplify fractions using division and common factors; to represent fractions using concrete materials and pictorial representations.<br>Lesson 3 – Comparing and Ordering Fractions: To compare fractions and place them in order from smallest to largest.<br>Lesson 4 – Comparing and Ordering Fractions: To compare and order fractions by finding common denominators.<br>Lesson 5 – Comparing and Ordering Fractions: To compare and order fractions using common factors.<br>Lesson 6 – Adding and Subtracting Fractions: Adding and subtracting fractions with different denominators; using pictorial representations to compare fractions and add/subtract.<br>Lesson 7 – Adding and Subtracting Fractions: To add and subtract fractions with different denominators; to develop questions and word problems based on the information provided.<br>Lesson 8 – Adding and Subtracting Fractions: To add and subtract fractions with different denominators.<br>Lesson 9 – Adding and Subtracting Fractions: To add and subtract mixed numbers, including fractions with different denominators; to subtract from the whole and add the remainder back on.<br>Lesson 10 – Adding and Subtracting Fractions: To add and subtract fractions with different denominators; to add and subtract mixed numbers.<br>Lesson 11 – Multiplying Fractions: To multiply fractions using pictorial representations and abstract methods.<br>Lesson 12 – Multiplying Fractions: To determine if the commutative law applies to fractions; to multiply fractions using concrete materials and pictorial representations.<br>Lesson 13 – Multiplying Fractions: To use concrete materials to understand and solve the multiplication of fractions; to simplify equations using pattern blocks.<br>Lesson 14 – Dividing a Fraction by a Whole Number: To divide a fraction by a whole number; to use pictorial representation to divide whole numbers into fractions.<br>Lesson 15 – Dividing a Fraction by a Whole Number: To divide fractions by whole numbers using concrete materials and pictorial representations; to divide fractions when the numerator and divisor are not easily divisible.<br>Lesson 16 – Dividing a Fraction by a Whole Number: To divide fractions by a whole number; to use pictorial representations to support division.<br>Lesson 17 – Chapter Consolidation |

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| **Textbook 6A** | **Chapter 4 – Decimals** | Lesson 1 – Writing and Reading Decimals: To read and write decimals to thousandths; to use concrete materials to represent decimals.<br>Lesson 2 – Dividing Whole Numbers: To divide whole numbers by larger whole numbers; to use Base 10 materials to represent tenths, hundredths and thousandths.<br>Lesson 3 – Dividing Whole Numbers: To divide whole numbers that give rise to decimals; calculate decimal fraction equivalents using long division.<br>Lesson 4 – Writing Fractions as Decimals: To convert fractions into decimals using bar models and long division.<br>Lesson 5 – Writing Fractions as Decimals: To write fractions as decimals; to use long division as the key strategy for turning fractions into decimals.<br>Lesson 6 – Multiplying Decimals: To multiply decimals by whole numbers using partitioning or the worded method to help find the solution.<br>Lesson 7 – Multiplying Decimals: To multiply whole numbers that include a decimal by other whole numbers; to use partitioning and the worded method as key strategies.<br>Lesson 8 – Multiplying Decimals: To multiply decimals by whole numbers including regrouping and renaming.<br>Lesson 9 – Multiplying Decimals: To multiply decimals by whole numbers using a variety of methods; to use the heuristic 'making a list' to help solve a problem.<br>Lesson 10 – Dividing Decimals: To divide decimals using number bonds and number discs as the key strategies.<br>Lesson 11 – Dividing Decimals: To divide decimals using bar models, number bonds and long division as key strategies, including regrouping and renaming.<br>Lesson 12 – Multiplying a Decimal by a 2-Digit Whole Number: To multiply decimals by a 2-digit whole number using number discs and the column method.<br>Lesson 13 – Dividing a Decimal by a 2-Digit Whole Number: To divide decimals by 2-digit numbers using number bonds and the worded method.<br>Lesson 14 – Dividing a Decimal by a 2-Digit Whole Number: To divide decimals by 2-digit whole numbers using number bonds and the worded method.<br>Lesson 15 – Chapter Consolidation |
| | **Chapter 5 – Measurements** | Lesson 1 – Converting Units of Length: To convert common measurements to metres, centimetres and millimetres.<br>Lesson 2 – Converting Units of Length: To convert units of measure into different units; to use knowledge of decimals and fractions to help convert units.<br>Lesson 3 – Converting Units of Length: To convert metres into kilometres as units of measure.<br>Lesson 4 – Converting Units of Mass: To convert units of mass from grams to kilograms using decimals and fractions.<br>Lesson 5 – Converting Units of Volume: To convert units of volume from millilitres to litres.<br>Lesson 6 – Converting Units of Time: To convert units of time from minutes to hours; to represent time using 24-hour notation.<br>Lesson 7 – Chapter Consolidation |
| | **Chapter 6 – Word Problems** | Lesson 1 – Solving Word Problems: To use bar models to solve word problems involving the four operations.<br>Lesson 2 – Solving Word Problems: To use the bar model heuristic to solve word problems involving the four operations.<br>Lesson 3 – Solving Word Problems: To use the bar model heuristic to solve complex word problems involving time.<br>Lesson 4 – Solving Word Problems: To solve complex word problems using pictorial representation and the four operations.<br>Lesson 5 – Solving Word Problems: To create and solve word problems that apply the bar model heuristic and working backwards as the main strategies.<br>Lesson 6 – Solving Word Problems: To create and solve complex word problems using the four operations.<br>Lesson 7 – Chapter Consolidation |

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| **Textbook 6B** | **Chapter 7 – Percentage** | Lesson 1 – Finding the Percentage of a Number: To find the percentage of a whole number using division and multiplication; to use bar modelling as a pictorial approach to calculating percentage.<br>Lesson 2 – Finding the Percentage of a Quantity: To find the percentage of a quantity; to use bar model diagrams to support the division and multiplication of numbers towards the percentage.<br>Lesson 3 – Finding Percentage Change: To find the percentage change in an amount over time; to calculate the percentage change where the number gives rise to a decimal.<br>Lesson 4 – Using Percentage to Compare: To use percentage, bar models and fractions to compare amounts.<br>Lesson 5 – Chapter Consolidation |
| | **Chapter 8 – Ratio** | Lesson 1 – Comparing Quantities: To use ratios and fractions to compare objects; to find the relationship between ratios, percentages and fractions.<br>Lesson 2 – Comparing Quantities: To determine the ratio of a quantity using concrete materials; to simplify ratios using concrete materials in addition to division.<br>Lesson 3 – Comparing Quantities: To compare more than two quantities using the term 'ratio'; to use bar models to express ratios where there is more than one quantity.<br>Lesson 4 – Comparing Quantities: To compare quantity using both fractions and ratios; to use bar model diagrams to represent ratios.<br>Lesson 5 – Comparing Quantities: To compare quantities using bar models and common factors; to use multiplication and division to simplify ratios.<br>Lesson 6 – Comparing Numbers: To compare numbers using ratios; to make decisions about simplifying ratios using division.<br>Lesson 7 – Solving Word Problems: To solve word problems using a variety of heuristics including guess-and-check and bar models; to apply knowledge of ratios to word problems.<br>Lesson 8 – Solving Word Problems: To solve word problems using the bar model heuristic; to employ division and multiplication as primary strategies when solving word problems visually.<br>Lesson 9 – Solving Word Problems: To apply the guess-and-check and advanced bar model heuristics to ratio word problems.<br>Lesson 10 – Chapter Consolidation |
| | **Chapter 9 – Algebra** | Lesson 1 – Describing a Pattern: To determine a pattern using concrete materials and pictorial representation; to use a table to identify a repeating pattern; to express a rule using a letter or symbol.<br>Lesson 2 – Describing a Pattern: To determine a pattern using concrete materials and pictorial representation; to use a table to identify a repeating pattern; to express the relationship between consecutive numbers in terms of a symbol or a letter.<br>Lesson 3 – Describing a Pattern: To determine a pattern using concrete materials and pictorial representation; to use a table to identify a pattern; to express the relationship between consecutive numbers in terms of a symbol or letter.<br>Lesson 4 – Describing a Pattern: To determine a pattern using concrete materials and pictorial representation; to use a table to identify a pattern; to express unknown numbers in terms of a letter or a symbol, including using a number before a letter for multiplication.<br>Lesson 5 – Writing Algebraic Expressions: To use a table to identify a pattern; to write algebraic expressions using each of the four operations.<br>Lesson 6 – Writing and Evaluating Algebraic Expressions: To use examples to identify rules; to write algebraic expressions using each of the four operations; to evaluate algebraic expressions including the use of inverse operations.<br>Lesson 7 – Writing and Evaluating Algebraic Expressions: To recognise patterns; to write algebraic expressions with two steps; to evaluate algebraic expressions with two steps.<br>Lesson 8 – Writing Formulae: To recognise patterns; to write and evaluate algebraic expressions with two steps; to write and use formulae.<br>Lesson 9 – Using Formulae: To use formulae to solve problems; to replace a letter/variable with a number then solve the equation; to use inverse operations to solve equations.<br>Lesson 10 – Solving Equations: To solve equations; to use equations to find unknown values.<br>Lesson 11 – Chapter Consolidation |

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| **Textbook 6B** | **Chapter 10 – Area and Perimeter** | Lesson 1 – Finding the Area and the Perimeter of Rectangles: To find the area and perimeter of rectangles; to calculate perimeter using the known area and vice versa.<br>Lesson 2 – Finding the Area of Parallelograms: To find and calculate the area of a parallelogram; to use concrete materials and prior understanding of area to construct a formula for the area.<br>Lesson 3 – Finding the Area of Triangles: To use prior knowledge of area to determine and solve the area of a triangle; to use and apply the formula for the area of a rectangle to solve problems involving triangles.<br>Lesson 4 – Finding the Area of Triangles: To calculate the area of a triangle using a formula; to calculate the area of a triangle in multiple ways.<br>Lesson 5 – Finding the Area of Triangles: To use multiple methods to solve the area of a triangle.<br>Lesson 6 – Finding the Area of Parallelograms<br>To find the area of a parallelogram using an understanding of triangles; to use concrete materials to find the area of a parallelogram.<br>Lesson 7 – Chapter Consolidation |
| | **Chapter 11 – Volume** | Lesson 1 – Finding the Volume of Cubes and Cuboids: To find the volume of cubes and cuboids using concrete materials.<br>Lesson 2 – Finding the Volume of Cubes and Cuboids: To determine the formula for the volume of cubes and cuboids and apply it to calculate the volume of shapes.<br>Lesson 3 – Finding the Volume of Cubes and Cuboids: To estimate the volume of objects and spaces; to calculate the volume of boxes using the formula for volume of cubes and cuboids.<br>Lesson 4 – Finding the Volume of Cubes and Cuboids: To calculate the volume of boxes using the formula for volume of a cube; to expose common misconceptions in volume through a 3-box arrangement.<br>Lesson 5 – Solving Problems Involving the Volume of Solids: To solve word problems involving the volume of cubes and cuboids; to apply the formula for the volume of a cube or cuboid.<br>Lesson 6 – Chapter Consolidation |
| | **Chapter 12 – Geometry** | Lesson 1 – Investigating Vertically Opposite Angles: To investigate opposite angles; to use prior knowledge of angles to solve problems involving angles.<br>Lesson 2 – Solving Problems Involving Angles: To solve problems involving angles using the bar model heuristic; to solve problems involving angles without protractors.<br>Lesson 3 – Investigating Angles in Triangles: To determine and show the sum of the angles inside a triangle.<br>Lesson 4 – Investigating Angles in Quadrilaterals: To investigate and determine angles in quadrilaterals.<br>Lesson 5 – Solving Problems Involving Angles in Triangles & Quadrilaterals: To use the knowledge of angles inside a triangle and a quadrilateral to solve problems involving angles in other shapes.<br>Lesson 6 – Naming Parts of a Circle: To name the parts of a circle; to calculate diameter and radius using parts of a circle.<br>Lesson 7 – Solving Problems Involving Angles in a Circle: To solve problems involving angles in a circle.<br>Lesson 8 – Drawing Quadrilaterals: To draw quadrilaterals with specific side lengths and parallel lines; to find the perimeter of shapes and name trapeziums and parallelograms.<br>Lesson 9 – Drawing Triangles: To draw triangles using measurements and angles as the starting point; to use a protractor to draw triangles using angles.<br>Lesson 10 – Drawing Triangles: To construct triangles using a protractor and ruler; to use ratio to determine the dimentions of a triangle.<br>Lesson 11 – Drawing Nets of Three-Dimensional Shapes: To construct the nets of 3-D shapes by identifying the faces and the 2-D shapes that construct them.<br>Lesson 12 – Drawing Nets of Three-Dimensional Shapes: To construct the nets of 3-D shapes by identifying the faces and the 2-D shapes that construct them.<br>Lesson 13 – Chapter Consolidation |

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| **Textbook 6B** | **Chapter 13 – Position and Movement** | Lesson 1 – Showing Negative Numbers: To represent negative numbers on both vertical and horizontal number lines. <br> Lesson 2 – Describing Position: To describe the positions of objects on a coordinate grid; to use x and y axes to determine the position of objects on a grid. <br> Lesson 3 – Describing Position: To describe the position of points using coordinates on a grid. <br> Lesson 4 – Drawing Polygons on a Coordinate Grid: To draw polygons on a coordinate grid; to recognise polygons on a coordinate grid. <br> Lesson 5 – Describing Translations: To describe the translation of shapes on a coordinate grid. <br> Lesson 6 – Describing Reflections: To describe reflection using a mirror line and the terms 'object' and 'image'. <br> Lesson 7 – Describing Movements: To reposition objects so they can be reflected in the x and y axes as the mirror line. <br> Lesson 8 – Describing Movements: To describe the movement of objects using the terms 'translation' and 'reflection'. <br> Lesson 9 – Using Algebra to Describe Position: To use algebra to descibe the positions of coordinates in relationship to one another. <br> Lesson 10 – Using Algebra to Describe Movements: To represent translation and reflection using algebraic notation. <br> Lesson 11 – Chapter Consolidation |
| | **Chapter 14 – Graphs and Averages** | Lesson 1 – Understanding Averages: To calculate the average (mean) of sets of values. <br> Lesson 2 – Calculating the Mean: To calculate the mean. <br> Lesson 3 – Calculating the Mean: To calculate the mean. <br> Lesson 4 – Solving Problems Involving the Mean: To solve problems involving the mean; use the mean and the number of values to calculate the total; use given information to find unknown values. <br> Lesson 5 – Showing Information on Graphs: To show information on graphs; to transfer information from a table to a pie chart. <br> Lesson 6 – Reading Pie Charts: To read and interpret pie charts. <br> Lesson 7 – Reading Pie Charts: To read and interpret pie charts; to use percentages in pie charts. <br> Lesson 8 – Reading Pie Charts: To read and interpret pie charts; to use knowledge of angles to interpret pie charts. <br> Lesson 9 – Reading Line Graphs: To read line graphs; to interpret the information in line graphs that show distance and time. <br> Lesson 10 – Reading Line Graphs: To read and interpret line graphs; to answer questions about the information in line graphs. <br> Lesson 11 – Converting Miles into Kilometres: To convert miles into kilometres and kilometres into miles. <br> Lesson 12 – Reading Line Graphs: To read and interpret line graphs. <br> Lesson 13 – Chapter Consolidation |
| | **Chapter 15 – Negative Numbers** | Lesson 1 – Adding and Subtracting Negative Numbers: To add and subtract negative numbers using a number line. <br> Lesson 2 – Using Negative Numbers: To create number stories using negative numbers. <br> Lesson 3 – Chapter Consolidation |