**St Peter’s CE Middle School Curriculum Overview Subject: Maths**

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| **Year 5** | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |
| **Topic:**  Number | **Topic:**  Number | **Topic:**  Number | **Topic:**  Number  Measurement | **Topic:**  Geometry  Number | **Topic:**  Number  Measurement |
| **Concept:**  Place Value  Addition and Subtraction | **Concept:**  Multiplication and Division  Fractions | **Concept:**  Multiplication and Division  Fractions  Decimals and percentages | **Concept:**  Decimals and Percentages  Perimeter & Area  Statistics | **Concept:**  Shape  Position and direction  Decimals | **Concept:**  Decimals  Negative numbers  Converting units  Volume |
| **Skills:**  Read, understand, write, order and compare numbers up  to 1 000 000.  Find powers of 10 and 10/100/1000/ 10,000/ 100,000 more or less  Number line to 1, 000, 000  Solve roman numerals to 1, 000  Rounding to the  nearest 10, 100, 1000, 10,000 and 100,000.  Add and subtract  mentally using increasingly larger  numbers.  Using a formal written method to add and subtract numbers with more than four digits.  Solving multi-step  problems using  rounding, inversion and estimation to check reliability and accuracy of answers. | **Skills:**  Multiply and divide  mentally using known  facts.  Identify multiples and  factors and use these terms with understanding.  Find common factors of two whole numbers  Identify prime numbers and explain how they are different from composite numbers  Understand the meaning of square and cube numbers and be able to use their notations.  Multiply and divide  whole numbers by 10, 100  and 1000.  Use knowledge of multiples of 10, 100 and 1000 to answer related questions.  Identify, name and write equivalent fractions.  Compare and order fractions greater and less than 1  Add and subtract fractions with the same denominator  Add 3 or more fractions by finding a common denominator  Add and subtract fractions to a mixed number including two mixed numbers | **Skills:**  Use a formal written  method for  multiplication and  division up to four  digits and with remainders. (Multiply 4-digit by 2-digit and divide 4-digit by 1-digit)  Understand the relationship between multiplication and division and use the inverse to  check answers.    Multiply proper  fractions and mixed numbers by whole numbers supported by concrete/pictorial  resources.  Multiply unit and non-unit fractions by an integer  Multiply mixed numbers by integers  Calculations fractions of quantity  Find fractions of an amount  Read and write  decimal numbers as  fractions. | **Skills:**  Recognise and use  thousandths and  relate them to tenths,  hundredths and other  decimal equivalences  Read, write, order and  compare decimal up  to three places.  Round decimals up to  two places to the  nearest whole number  and one decimal  place.  Recognise the per  cent symbol and  understand that  percent relates to  number or parts per  hundred.  Write percentages as  a fraction (out of 100).  Measure and calculate perimeter of rectilinear shapes and apply this knowledge to calculate unknown side lengths.  Find the area of rectangles, compound shapes and irregular shapes.  Read, interpret and draw bar charts and line graphs as well as two-way tables  Solve comparison,  sum and difference  problems using  bar charts and line graphs.  Complete, read and  interpret information  in tables, including  timetables. | **Skills:**  Measure and draw given angles  and measure them in  degrees accurately  Know and identify the features of triangle, rectangle and regular polygons.  Identify angles at a  point, around a point, on a straight line  and in a triangle.  Know the difference  between regular and  irregular polygons.  Use the properties of  rectangles to find  missing lengths and  angles in shapes  Identify 3D shapes,  including cubes and  cuboids using  knowledge of 2D  shapes.  Read, write and plot co-ordinates in the first quadrant  Identify, describe and represent the position of a shape following a reflection or translation.  Adding (crossing the whole) and subtracting decimals including with the same number of decimal places  To complete decimal sequences  Multiplying and dividing decimals by 10, 100 and 1000. | **Skills:** Solve problems  involving numbers up  to three decimal  places.  Solve problems which  require knowing  percentage and  decimal equivalence  e.g. ½, ¼, 1/5  To understand negative numbers and solve problems  Convert between  different unit of  metric measure e.g.  km and m, l and ml  etc.  Understand how to  use equivalences  between metric units  and common imperial  units such as inches,  pounds and pints.  Solve problems  involving converting  between units of  time.  To know what the volume (cubes/ cuboids) and to compare and estimate volume including finding the capacity. |
| **Outcome:**  To use mental and written methods for addition and subtraction efficiently | **Outcome:**  To be able to multiple and divide mentally  To be able to use fraction understanding to add and subtract any fraction | **Outcome:**  To use mental and written methods for multiplication and division including fractions | **Outcome:**  To read, write, order, compare and round decimals  To understand what a percent is  To interpret, read and solve information in tables, charts, graphs | **Outcome:**  To be able to use a protractor to draw, measure and find missing angles | **Outcome:**  To be able to convert between different units of measure including metric and imperial  To apply skills to solve problems linked to money |

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| **Year 6** | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |
| **Topic:**  **Number** | **Topic:**  **Number**  **Measurement** | **Topic:**  **Number** | **Topic:**  **Number**  **Measure** | **Topic:**  **Geometry** | **Topic:**  **Consolidation**  **SATS**  **Y7 Sequences** |
| **Concept:**  **Place Value**  **Addition**  **Subtraction**  **Multiplication**  **Division** | **Concept:**  **Fractions**  **Converting Units** | **Concept:**  **Ratio**  **Algebra**  **Decimals** | **Concept:**  **Fraction, decimals and percentages**  **Area, perimeter and volume**  **Statistics** | **Concept:**  **Shape**  **Position and Direction** | **Concept:**  **Revision of topics**  **Sequences** |
| **Skills:**  Read, write, order and compare numbers up to 10,000,000.  Find powers of 10  Compare and order any digit and determine the value of each digit.  Rounding whole numbers to a required degree of accuracy.  Use negative numbers in context and calculate intervals across zero.  Add and subtract any integer  Find common factors, multiples including prime, square and cube numbers  Multiply multi-digit numbers using the formal written method up to 4 by 2 digit  Use short and long division including with remainders  Solve multi-step problems with the four operations  To use order of operations | **Skills:**  Find equivalent and common factors to simplify fractions and common multiples to find equivalences.  Compare and order fractions, including fractions > 1  Add and subtract fractions with different denominators and mixed fractions.  To solve multi-step problems with fractions  Multiply integers with fractions  Multiply simple pairs of proper fractions, writing the answer in its simplest form.  Divide fractions by integers  Find fraction of amounts including finding the whole  To convert and calculate with metric measures including miles and kilometres  To convert between imperial measures | **Skills:**  Use ratio language – ‘For every’  Use objects and diagrams to compare ratios and fractions.  Use the colon notation as the ratio symbol, and link the language ‘for every  Begin to calculate ratios to find both a part and a whole.  Enlarge shapes using scale factors  Find scale factors when given similar shapes  Solve ratio and proportion problems  Find and solve one and two step rules and equations  To form expressions and using the concept of substitution    Understand place value up to 3 decimal places  Multiply and Divide whole numbers and decimals by 10,100 and 1000  Multiply and Divide decimals by integers  Apply understanding of division to solve problems using division up to 2 decimal places.  Convert a decimal to a fraction and simplify  Convert fraction to decimal finding the equivalent fraction where the denominator is 10, 100 1000, so you are able to divide.  Understand the fraction line is same a division. | **Skills:**  Convert fraction to percentage using equivalent fraction to ensure denominator is 100  Find common equivalent fraction, percentage and decimals  Convert between fractions, percentages and decimals to compare and order  Find percentage of an amount starting with 50%, 25%, 10% and 1% only and then building onto multiples of 10% and 5%  Use inverse to find missing values when solving a percentage problem  Find and draw rectilinear shapes that have the same area.  Calculate area and perimeter of rectilinear shapes  Explore that shapes with the same area can have the same or different perimeters.  Work out the area of different triangles by counting.    Use the formula, base × perpendicular height ÷ 2 to calculate the area of a variety of triangles  Find the area of a parallelogram.  Find volume of cuboids by counting cubes and using formula (𝑙 × 𝑤 × ℎ)  Read and interpret line graphs  Draw Line graphs  Solve problems using line graphs  Label parts of a circle  Read and Interpret pie charts  Draw Pie charts using knowledge of angles  Find the mean using formula  Mean = Total ÷ number of items. | **Skills:**  Measure with a protractor  Draw lines and angles accurately  To know the total angles on a straight line  To know angles around a point equal to 360 ˚  Recognise that vertically opposite angles share a vertex  Explore interior angles of a triangle which add up to 180 degrees.  Find missing angles in right angle triangles and isosceles triangles  Explore angles in quadrilateral that add up to 180  Explore angles in polygons  Draw shapes accurately  Identify nets of 3D shapes  Describe positions on the full coordinate grid.  Describe positions on a four-quadrant grid.  Draw and translate simple shapes on the coordinate plane and reflect them in the axes. | **Skills:**  Investigations and Problem solving  Across a range of topics  Develop calculator skills |
| **Outcome:**  To be able to use written methods confidently | **Outcome:**  To use methods of fractions to solve problems | **Outcome:**  To be able to understand the ratio symbol to solve problems  To be able to efficiently multiply and divide | **Outcome:**  To be able to convert fractions, decimals and percentages  To calculate the area and perimeter of shapes | **Outcome:**  To measure, accurately draw angles and solve missing angle problems  To describe positions on a full coordinate grid to translate and reflect | **Outcome:**  To begin to develop key skills that will be used in KS3 |

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| **Year 7** | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |
| **Topic:**  **Algebraic Thinking** | **Topic:**    **Number**  **Place Value and Proportion** | **Topic:**  **Applications of Number** | **Topic:**  **Directed Numbers**  **Fractional Thinking** | **Topic:**  **Lines and Angles** | **Topic:**  **Reasoning with number** |
| **Concept:**  **Sequences**  **Understanding algebraic notation**  **Equality and Equivalence** | **Concept:**  **Place Value with integers and decimals**  **Fraction Decimal equivalence** | **Concept:**  **Solving problems using four operations**  **Fractions and percentages of amounts** | **Concept:**  **Operations and equations with directed number**  **Addition and subtraction of fractions** | **Concept:**  **Constructing, measuring and using algebraic notation**  **Developing geometric reasoning** | **Concept:**  **Develop number sense**  **Sets and Probability**  **Prime numbers and proof** |
| **Skills:**  Describe and continue sequences in graphs, tables and diagrams as well as in numbers.  Identify linear and non-linear sequences and be able to continue them  Explain the term to term rule and find missing terms  Find input and output using a single function machine  Using algebraic expressions to generalise diagrams and letters  Begin to understand simple expression and use them with a function machine  Substitute values into single expressions  Find functions, substitute values and generate sequences using two step expressions  Begin to represent one and two step functions graphically  Understand the meaning of equivalence and the use of the = sign  Solve one step linear equations using inverse operations  Understand the meaning of like and unlike terms and being to simplify algebraic expressions | **Skills:**  Recognise place value, write integers in words and figures up to 1 billion  Work out intervals on a number line and position integers  Compare and order integers using signs up to 1 billion =, ≠, <, >, ≤, ≥  Understand place value of decimalsand position on a number line  Round numbers to 1 significant number  Begin to use standard form (H)  Represent fractions on diagrams and on a number line  Convert fractions and decimals including tenths, hundredths, fifths, quarters, eighths and thousandths  Convert fluently between fractions, percentages and decimals  Use fractions to interpret pie charts  Explore fractions above one and convert to decimals and percentages | **Skills:**  Understand mental strategies for addition and subtraction  Use formal methods for addition and subtractions  Solve problems in different contexts linked to measure and statistics  Add and subtract numbers given in standard form  Understand multiples and factors  Use formal methods to multiply and divide integers  Understand the order of operation  Solve problems linked to measures and statistics  Explore multiplication and division in algebraic expressions  Find fraction and percentage of an amount and apply to solve problems greater than 1 and 100% (H) | **Skills:**  Understand and use representations of directed numbers  Order directed number using a number line and appropriate symbols  Perform calculations that cross zero  Add and subtract directed numbers  Multiply and divide directed numbers  Use a calculator to solve directed number calculations  Evaluate algebraic expressions with directed numbers  Solve two step equations  Use order of operations  Find roots of positive numbers (H)  Explore higher powers and roots (H)  Represent fractions in various ways  Convert mixed numbers into improper fractions  Add and subtract unit and non-unit fractions with the same denominator  Add and subtract fractions with integers  Find equivalent fractions  Add and subtract unit and non-unit fractions with the different denominator – using multiples  Add and subtract mixed numbers and improper fractions  Add and subtract fractions and decimals  Solving fractions in algebraic contexts  Add and subtract algebraic fractions (H) | **Skills:**  Understand and use letter and labelling conventions  Drawand measure line segments including geometric figures  Describe angles as a measure of a turn  Classify a range of angles  Measure and draw angles up to 180 degrees using a protractor  Measure and draw angles between 180 and 360 degrees using a protractor  Identify parallel and perpendicular lines  Recognise and describe properties of different triangles  Recognise and describe properties of different quadrilaterals  Recognise and identify polygons up to a decagon  Construct triangles using side-side-side (SSS) Side-angle-side (SAS) Angle-side-angle (ASA)  Construct complex polygons  Interpret pie charts using proportion  Interpret and draw pie charts using a protractor  Understand and use angles on a straight line and on a point  Understand and use equality of vertically opposite angles  Know and apply sums of angles in a triangle and a quadrilateral  Solve angles problems  Find and use the angles sum of a polygon (H)  Investigate angles in parallel lines (H)  Use parallel line angle rules (H)  Use known facts to obtain simple proof (H) | **Skills:**  Know and use mental addition and subtraction strategies for integers  Know and use mental multiplication and division strategies for integers  Know and use mental arithmetic strategies for decimals and fractions  Use estimation as a method for checking mental calculations  Use known number and algebraic facts to derive other facts  Know when to use mental, formal written or calculator methods  Identify and represent sets  Interpret and create Venn diagrams  Understand and use the intersection and union of sets  Understand and use the complement of a set (H)  Know and use the vocabulary of probability  Generate sample spaces for single events  Calculate the probability of a single event  Understand and use the probability scale  Know that the sum of probabilities for all possible outcomes is 1  Find and use factors and multiples  Recognise and identify prime numbers  Recognise and identify square numbers and triangular numbers  Find lowest common multiples and highest common factors  Use factor trees to write a number as a product of its prime factors  Use a Venn diagram to calculate HCF and LCM (H)  Make and test conjectures and  Use counter examples to disprove a conjecture |
| **Outcome:**  To understand basic concepts on Algebra and write expressions. | **Outcome:**  To use skills of number knowledge and apply to solve real-life problems | **Outcome:**  To use clear written methods and apply to solve real-life problems involving finance and measure | **Outcome:**  To understand all methods of fraction calculations and apply to solving problems | **Outcome:**  To understand how to use equipment to construct shapes. To understand all properties of shapes and lines including their angles | **Outcome:**  To understand the different types of numbers and how they can be used to solve calculations and problems |

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| **Year 8** | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |
| **Topic:**  **Proportional Reasoning** | **Topic:**  **Representations** | **Topic:**  **Algebraic Techniques** | **Topic:**  **Developing Number** | **Topic:**  **Developing Geometry** | **Topic:**  **Reasoning with Data** |
| **Concept:**  Ratio and Scale  Multiplicative Change  Multiplying and Dividing fractions | **Concept:**  Equations of a straight line  Interpreting and representing data  Finding probability | **Concept:**  Brackets, Equations & Inequalities  Sequences  Indices | **Concept:**  Fractions and Percentages  Standard Index Form  Number sense | **Concept:**  Angles  Area of Trapeziums and circles  Line of symmetry and reflection | **Concept:**  Data Handling  Measures of location |
| **Skills:**  Understand the meaning of ratio and use the notation  Simplify ratios in its simplest form  Solve ratio problems by dividing in a given ratio  Link ratios to other contexts such as fractions, pie and gradient.  Explore conversion graphs and convert between money and units of measures  Explore direct proportion  Understand scale factor and use to interpret scale diagrams and maps  Multiply and divide fractions by unit fractions and integers  Multiply and divide improver fractions and mixed numbers  Multiply and divide algebraic fractions | **Skills:**  Draw, plot and find co-ordinates on a four-quadrant grid  Recognise lines that form y = x, y = kx, y = x + a  Explore positive and negative gradients and know how to form lines y = mx + c  Link graphs to sequences and explore linear and non-linear graphs  To draw and interpret scatter diagrams and drawing and using the line of best fit  Identify different types of data and be able to read and interpret ungrouped and grouped frequency tables, discrete data and two-way tables  Construct sample space for one or more events  Find the probability from a sample space diagram, two-way tables, Venn Diagram  Use product rule for total possible outcomes | Skills:  Form algebraic expressions  Use directed number with algebra  Expand single brackets, multiple single brackets, binomials, and simplify  (Form and) solve equations, including with brackets  Understand and (form and) solve simple inequalities  Solve equations and inequalities with unknowns on both sides (H)  Form and solve equations and inequalities with unknowns on both sides (H)  Generate terms of a sequence from either a term-to-term or a position-to-term rule  Recognise arithmetic sequences and find the *n*th term  Recognise geometric sequences and appreciate other sequences that arise.  Adding and subtracting expressions with indices  Simplify algebraic expressions by multiplying and dividing  Use the law of indices  Finding powers of powers (H) | Skills:  Convert fluently between key fractions decimals and percentages  Calculate key fractions, decimals and percentages of an amount with and without a calculator  Convert between decimals and percentages greater than 100%  Calculate percentage increase and decrease using a multiplier  Express one number as a fraction or a percentage of another with and without a calculator  Work with percentage change  Choose appropriate methods to solve percentage problems and complex percentage problems  Find the original amount given the percentage less than OR greater than 100% (H)  Investigate positive and negative powers of 10  Work with numbers greater than 1 in standard form  Work with numbers between 0 and 1 in standard form  Compare, order and mentally calculate numbers in standard form  Add, subtract, multiply and divide numbers in standard form  Use calculator to work with numbers in standard form  Use negative and fractional indices (H)  Round numbers to powers of 10 and 1 significant figure  Round numbers to a given number of decimal places  Estimate the answer to a calculation  Understand and use error interval notation (H)  Calculate using the order of operations, money  Convert metric measures of lengths, weights and capacity  Convert metric units of area and volume (H)  Solve problems involving time and the calendar | Skills:  Understand and use basic angle rules and notation  Investigate angles between parallel lines and the transversal  Identify and calculate with co-interior, alternate and corresponding angles  Solve complex problems with parallel line angles  Construct triangles and special quadrilaterals  Identify and calculate with sides and angles in special quadrilaterals  Understand and use the properties of diagonals of quadrilaterals  Understand and use the sum of exterior angles of any polygon  Calculate and use the sum of the interior angles in any polygon    Prove simple geometric facts (H)  Construct an angle bisector (H)  Construct a perpendicular bisector of a line segment (H)  Calculate the area of triangles, rectangles and parallelograms  Calculate the area of a trapezium  Calculate the perimeter and area of compound shapes (1)  Calculate the area of a circle and parts of a circle with AND without a calculator  Recognise line symmetry  Reflect a shape in a horizontal or vertical line (shapes touching the line and not touching the line)  Reflect a shape in a diagonal line 1 (shapes touching the line and not touching the line) | Skills:  Set up a statistical enquiry and design and criticise questionnaires  Draw and interpret pictograms, bar charts, multiple bar charts and vertical line charts  Draw and interpret line charts and pie charts  Choose the most appropriate diagram for given set of data  Represent and interpret grouped quantitative data  Find and interpret the range  Compare distributions using charts  Identify misleading graphs  Understand and use the mean, median and mode  Find the mean from a grouped and ungrouped frequency table (H)  Identify outliers on graphs and tables  Compare distributions using averages and the range |
| **Outcome:**  To know how to use the correct methods to scale and solve real-life problems | **Outcome:**  To draw straight-line graphs and represent data in different forms. | **Outcome:**  To apply algebra skills and methods to solve problems. | **Outcome:**  To apply number knowledge and understand calculator and non-calculator method to use when solving real-life problems | **Outcome:**  To know properties, methods and angle rules to solve complex problem | **Outcome:**  To interpret and find averages of a set of given data linked to real-life. |