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

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Year 5**  | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |
| **Topic:** Number | **Topic:** Number | **Topic:** Number  | **Topic:**  NumberMeasurement | **Topic:** GeometryNumber  | **Topic:** Number Measurement |
| **Concept:** Place ValueAddition and Subtraction | **Concept:** Multiplication and DivisionFractions | **Concept:** Multiplication and DivisionFractionsDecimals and percentages  | **Concept:**  Decimals and PercentagesPerimeter & AreaStatistics  | **Concept:** ShapePosition and directionDecimals  | **Concept:** DecimalsNegative numbersConverting unitsVolume  |
| **Skills:** Read, understand, write, order and compare numbers upto 1 000 000.Find powers of 10 and 10/100/1000/ 10,000/ 100,000 more or lessNumber line to 1, 000, 000Solve roman numerals to 1, 000Rounding to thenearest 10, 100, 1000, 10,000 and 100,000.Add and subtractmentally using increasingly largernumbers.Using a formal written method to add and subtract numbers with more than four digits.Solving multi-stepproblems usingrounding, inversion and estimation to check reliability and accuracy of answers. | **Skills:** Multiply and dividementally using knownfacts.Identify multiples andfactors and use these terms with understanding.Find common factors of two whole numbersIdentify prime numbers and explain how they are different from composite numbersUnderstand the meaning of square and cube numbers and be able to use their notations.Multiply and dividewhole numbers by 10, 100and 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 1Add and subtract fractions with the same denominatorAdd 3 or more fractions by finding a common denominatorAdd and subtract fractions to a mixed number including two mixed numbers | **Skills:** Use a formal writtenmethod formultiplication anddivision up to fourdigits 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 tocheck answers. Multiply properfractions and mixed numbers by whole numbers supported by concrete/pictorialresources.Multiply unit and non-unit fractions by an integer Multiply mixed numbers by integersCalculations fractions of quantity Find fractions of an amountRead and writedecimal numbers asfractions. | **Skills:** Recognise and usethousandths andrelate them to tenths,hundredths and otherdecimal equivalencesRead, write, order andcompare decimal upto three places.Round decimals up totwo places to thenearest whole numberand one decimalplace.Recognise the percent symbol andunderstand thatpercent relates tonumber or parts perhundred.Write percentages asa 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 differenceproblems usingbar charts and line graphs.Complete, read andinterpret informationin tables, includingtimetables. | **Skills:** Measure and draw given anglesand measure them indegrees accurately Know and identify the features of triangle, rectangle and regular polygons.Identify angles at apoint, around a point, on a straight lineand in a triangle.Know the differencebetween regular andirregular polygons.Use the properties ofrectangles to findmissing lengths andangles in shapesIdentify 3D shapes,including cubes andcuboids usingknowledge of 2Dshapes.Read, write and plot co-ordinates in the first quadrantIdentify, 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 placesTo complete decimal sequences Multiplying and dividing decimals by 10, 100 and 1000. | **Skills:** Solve problemsinvolving numbers upto three decimalplaces.Solve problems whichrequire knowingpercentage anddecimal equivalencee.g. ½, ¼, 1/5 To understand negative numbers and solve problemsConvert betweendifferent unit ofmetric measure e.g.km and m, l and mletc.Understand how touse equivalencesbetween metric unitsand common imperialunits such as inches,pounds and pints.Solve problemsinvolving convertingbetween units oftime.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 imperialTo apply skills to solve problems linked to money |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **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 10Compare 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 integerFind common factors, multiples including prime, square and cube numbersMultiply multi-digit numbers using the formal written method up to 4 by 2 digit Use short and long division including with remaindersSolve multi-step problems with the four operationsTo 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 fractionsMultiply integers with fractions Multiply simple pairs of proper fractions, writing the answer in its simplest form. Divide fractions by integersFind fraction of amounts including finding the wholeTo convert and calculate with metric measures including miles and kilometresTo 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 everyBegin to calculate ratios to find both a part and a whole.Enlarge shapes using scale factors Find scale factors when given similar shapesSolve ratio and proportion problemsFind and solve one and two step rules and equationsTo form expressions and using the concept of substitution Understand place value up to 3 decimal placesMultiply and Divide whole numbers and decimals by 10,100 and 1000 Multiply and Divide decimals by integersApply 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 shapesExplore 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 trianglesFind the area of a parallelogram.Find volume of cuboids by counting cubes and using formula (𝑙 × 𝑤 × ℎ) Read and interpret line graphsDraw Line graphsSolve problems using line graphsLabel parts of a circle Read and Interpret pie chartsDraw Pie charts using knowledge of angles Find the mean using formula Mean = Total ÷ number of items.  | **Skills:** Measure with a protractorDraw 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 180Explore angles in polygonsDraw 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 solvingAcross a range of topicsDevelop 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 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **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 termsFind 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 operationsUnderstand 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 billionWork 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 lineRound numbers to 1 significant numberBegin 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 thousandthsConvert fluently between fractions, percentages and decimals Use fractions to interpret pie chartsExplore 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 formUnderstand multiples and factors Use formal methods to multiply and divide integers Understand the order of operationSolve problems linked to measures and statistics Explore multiplication and division in algebraic expressionsFind fraction and percentage of an amount and apply to solve problems greater than 1 and 100% (H) | **Skills:** Understand and use representations of directed numbersOrder directed number using a number line and appropriate symbolsPerform calculations that cross zeroAdd and subtract directed numbersMultiply and divide directed numbersUse a calculator to solve directed number calculations Evaluate algebraic expressions with directed numbersSolve 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 figuresDescribe 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 protractorIdentify 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 integersKnow and use mental multiplication and division strategies for integersKnow and use mental arithmetic strategies for decimals and fractions Use estimation as a method for checking mental calculationsUse known number and algebraic facts to derive other factsKnow when to use mental, formal written or calculator methodsIdentify and represent sets Interpret and create Venn diagramsUnderstand and use the intersection and union of setsUnderstand and use the complement of a set (H)Know and use the vocabulary of probabilityGenerate sample spaces for single eventsCalculate the probability of a single eventUnderstand and use the probability scaleKnow that the sum of probabilities for all possible outcomes is 1Find and use factors and multiples Recognise and identify prime numbers Recognise and identify square numbers and triangular numbersFind 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 andUse 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 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **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 dataFinding probability | **Concept:**Brackets, Equations & Inequalities Sequences Indices | **Concept:** Fractions and PercentagesStandard Index FormNumber sense | **Concept:** Angles Area of Trapeziums and circlesLine 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 formSolve 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 + aExplore positive and negative gradients and know how to form lines y = mx + c Link graphs to sequences and explore linear and non-linear graphsTo draw and interpret scatter diagrams and drawing and using the line of best fitIdentify different types of data and be able to read and interpret ungrouped and grouped frequency tables, discrete data and two-way tablesConstruct 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 expressionsUse directed number with algebraExpand single brackets, multiple single brackets, binomials, and simplify(Form and) solve equations, including with bracketsUnderstand and (form and) solve simple inequalitiesSolve 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 indicesSimplify algebraic expressions by multiplying and dividingUse the law of indices Finding powers of powers (H)  | Skills: Convert fluently between key fractions decimals and percentagesCalculate key fractions, decimals and percentages of an amount with and without a calculatorConvert between decimals and percentages greater than 100%Calculate percentage increase and decrease using a multiplierExpress one number as a fraction or a percentage of another with and without a calculatorWork with percentage changeChoose 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 10Work with numbers greater than 1 in standard formWork with numbers between 0 and 1 in standard formCompare, order and mentally calculate numbers in standard formAdd, subtract, multiply and divide numbers in standard formUse calculator to work with numbers in standard form Use negative and fractional indices (H)Round numbers to powers of 10 and 1 significant figureRound numbers to a given number of decimal placesEstimate the answer to a calculationUnderstand and use error interval notation (H)Calculate using the order of operations, money Convert metric measures of lengths, weights and capacityConvert metric units of area and volume (H)Solve problems involving time and the calendar | Skills: Understand and use basic angle rules and notationInvestigate angles between parallel lines and the transversalIdentify and calculate with co-interior, alternate and corresponding anglesSolve complex problems with parallel line anglesConstruct triangles and special quadrilateralsIdentify and calculate with sides and angles in special quadrilateralsUnderstand and use the properties of diagonals of quadrilateralsUnderstand and use the sum of exterior angles of any polygonCalculate 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 parallelogramsCalculate the area of a trapeziumCalculate the perimeter and area of compound shapes (1)Calculate the area of a circle and parts of a circle with AND without a calculatorRecognise line symmetryReflect 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 chartsDraw and interpret line charts and pie charts Choose the most appropriate diagram for given set of dataRepresent and interpret grouped quantitative dataFind and interpret the rangeCompare distributions using chartsIdentify misleading graphsUnderstand and use the mean, median and modeFind 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.  |