At St Peter's we believe that a broad and balanced curriculum with a strong academic core is a right for all pupils. We seek to encourage pupils to explore subjects of interest around their in-school learning and to enhance their curriculum experience through enrichment.

| Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Unit of Work/Big Question | Unit of Work/Big Question | Unit of Work/Big Question | Unit of Work/Big Question | Unit of Work/Big Question | Unit of Work/Big Question |
| - Number: Percentages and surds <br> - Algebra: expanding binomials <br> - Shape: Congruence, similarity, perimeter, area and volume | - Algebra: Coordinate axes and straight line graphs and functions <br> - Shape: Pythagoras' theorem, trigonometry with right angled triangles <br> - Statistics: Probability | - Number/ Algebra: Direct and inverse proportion <br> - Algebra: Substitution into formulae. Solve linear equations. <br> - Shape: Properties in polygons | - Algebra: Solve quadratic equations. Function notation. Quadratic, cubic and reciprocal functions | - Shape: Transformations. Surface area <br> - Statistics: Measures of central tendency and spread, types of data and sampling. <br> - Algebra: The circle and tangents | - Statistics: Cumulative frequency, box plot, histograms and venn diagrams. |
| Knowledge | Knowledge | Knowledge | Knowledge | Knowledge | Knowledge |
| - Decimals as multipliers with percentage problems <br> - Expand double brackets including square brackets and simplify algebraic expressions. <br> - Rational and irrational numbers <br> - Identify a surd, simplify surds and conduct all 4 numerical operations with surds. <br> - Perimeter and area of 2D shapes <br> - Congruency in and similarity <br> - Volume and area with Scale factor <br> - Substitution into formulae to calculate volumes | - Use coordinate axes to problem solve and plot graphs of straight lines <br> - Manipulation of $y=m x+c$. Find the gradients of a line and parallel and perpendicular lines. <br> - Apply Pythagoras' Theorem and trigonometry to right angled triangles with and without calculators. <br> - Listing all possible outcomes for 2 or more events using appropriate diagrams and use diagrams to solve probability problems. <br> - Convert between fractions percentages and decimals. Find unknown quantities and use equations in ratio to solve real life problems in ratio. | - Identify and construct equations and graphs for direct and inverse proportion problems. <br> - Solve equations of direct and inverse proportion. <br> - Solve linear equations written in any form. <br> - Substitution into formulae. <br> - Know and utilise all properties of triangles, quadrilaterals and other polygons to solve problems. | - Solve quadratic equations by factorising, completing the square and using quadratic formula. - Rearrange formula, understand function notation, composite functions, inverse functions and solve equations written in function notation. <br> - Find approximate solutions to equations from graphs. Interpret and sketch graphs of quadratic functions, simple cubic functions and reciprocal functions. | - Rotation, reflection, translation and enlargement. <br> - Invariance <br> - Compare and describe distributions of data sets <br> - Know and understand the definitions for different types of data including populations and samples <br> - Surface area of spheres, cones and composite solids. <br> - The equation of a circle with centre the origin and equation of tangents to a circle. | - Construction and interpretation of cumulative frequency diagrams including box plots <br> - Set theory <br> - Venn diagrams <br> - Conditional probability <br> - Construction and interpretation of histograms. |
| Skills \& Procedural Knowledge | Skills \& Procedural Knowledge | Skills \& Procedural Knowledge | Skills \& Procedural Knowledge | Skills \& Procedural Knowledge | Skills \& Procedural Knowledge |
| Decimals as multipliers with percentage problems <br> - I can use multipliers to find percentages of amounts. <br> - I can use multipliers to carry out percentage change calculations <br> - I can identify a percentage change <br> - I can find the original value of a | Use coordinate axes to problem solve and plot graphs of straight lines <br> - I can solve geometrical problems on coordinate axes. <br> - I can plot graphs of straight lines from their equations <br> Manipulation of $y=m x+c$. Find the | Identify and construct equations and graphs for direct and inverse proportion problems. <br> - I can identify cases of direct and inverse proportion correctly <br> - I can recognize and interpret graphs that illustrate direct and inverse proportion. <br> Solve equations of direct and inverse | Solve quadratic equations by factorising, completing the square and using quadratic formula. <br> - I can factorise a quadratic equation of the form $\mathrm{x}^{2}+\mathrm{bx}+\mathrm{c}=\mathbf{0}$ to find its solutions <br> - I can complete the square for equations of the form $x^{2}+b x+c=0$ To find the solutions in rounded and | Rotation, reflection, translation and enlargement. <br> - I can construct, identify and describe congruent shapes formed by translation. <br> - I can construct, identify and describe congruent shapes formed by reflection. <br> - I can construct, identify and | Construction and interpretation of cumulative frequency diagrams including box plots <br> - I can construct cumulative frequency polygons. <br> - I can estimate the median, quartiles and interquartile range from a cumulative frequency polygon. |

- I can carry out compound interest and depreciation calculations - I can find unknown interest rates or original values in compound interest or depreciation calculations

Expand double brackets including square brackets.

- I can expand and simplify double brackets
-I can expand and simplify square brackets
-I can recognise expansions that give the "difference of two squares"

Identify a surd, simplify surds and conduct all 4 numerical operations with surds.
I can simplify surds
-I can expand and simplify brackets containing surds
I can add, subtract, multiply and divide with surds.
-I can rationalise denominators

Perimeter and area of $2 D$ shapes I can calculate the perimeter of 2D shapes including circles and composite shapes

- I can calculate the area of circles and composite shapes

Congruency and Similarity -I can understand the congruence rules for triangles

- I can apply angle rules and shape properties in problems to prove congruence
-I can use scale factors to determine if shapes are similar
-I can find missing lengths when given similar shapes

Volume and Scale factor
-I can find the volume of any prism, pyramid, cone or sphere

- I can find the volume of a frustum -I can apply scale factor in any area or volume similarity question
gradients of a line and parallel and perpendicular lines.
- I can use $y=m x+c$ to identify parallel and perpendicular lines - I can find the equation of the line through a point with a given gradient
- I can find the equation of a line through two given points - I can find the equations of perpendicular lines

Apply Pythagoras' Theorem and trigonometry to right angled triangles with and without calculators.
-I can remember SOHCAHTOA -I can find missing angles in right angled triangles
-I can find missing lengths in right angled triangles
-I can recall exact values of $\sin \theta$, $\cos \theta$ or $\tan \theta$ for $\theta=0^{\circ}, 30^{\circ}, 45^{\circ}, 60^{\circ}$ or 90

Listing all possible outcomes for 2 or more events using appropriate diagrams and use diagrams to solve probability problems.
-I can find probabilities by listing outcomes or use a sample space diagrams

- I can use venn diagrams and recognise all forms of set notation -I can I can use frequency trees in context
-I can use probability trees for combined events
-I can use probability trees or two-way tables to solve conditional probability problems

Convert between fractions, percentages, decimals. Find unknown quantities. Use equations in ratio to solve real life problems.
-I can convert from ratios to
fractions and use them
interchangeably
-I can find unknown parts or wholes in a sharing ratio problems
-I can convert between equations and ratios
-I can combine ratios and solve problems in context

## exact form.

 - I can apply the quadratic formula to solve equations of the form $a x^{2}+b x+c=0$- I can rearrange formulae into the form $a x^{2}+b x+c=0$

Rearrange formula, understand function notation, composite functions, inverse functions and solve equations written in function notation.

- I can make $f(x)$ the subject of a - I can ma
- I can use $f(x)$ notation to find values of functions with numerical substitutions.
- I can use $f(x)$ notation to find values of functions with algebraic substitutions.
- I can write composite functions and find their solutions by substitution both numerically and algebraically.
- I can write inverse functions and find their solutions by substitution both numerically and algebraically. - I can form and solve equations written in function notation.

Find approximate solutions to equations from graphs. Interpret and sketch graphs of quadratic functions, simple cubic functions and reciprocal functions.

- I can find approximate solutions to quadratic equations from their graph.
- I can recognise, sketch and interpret graphs of quadratic functions.
- I can Identify and interpret roots, intercepts and turning points of quadratic functions graphically. - I can recognise, sketch and interpret graphs of quadratic functions, simple cubic functions and the reciprocal function.
describe congruent shapes formed by rotation.
I can construct, identify and describe similar shapes formed by enlargement including negative and fractional scale factors.


## Invariance

I can identify and describe invariance achieved by rotations, reflections and translations

Compare and describe distributions of data sets

- I can interpret, analyse and compare distributions of data sets using measures of central tendency (median, mean, mode and modal class).
- I can interpret, analyse and compare distributions of data sets using measures of spread (range, including consideration of outliers, quartiles and interquartile range).

Know and understand the definitions for different types of data including populations and samples

- I know, understand and can apply the terms: primary data, secondary data, discrete data and continuous data to describe a data set.
- I can apply statistics to describe a population.
- I know the difference between a population and a sample of data. - I understand the limitations of sampling.

Surface area of spheres, cones and composite solids.

- I can calculate the surface area of spheres, cones and composite solids using the formulae provided in the question

The equation of a circle with centre the origin and equation of tangents to a circle.

- I can recognise and use the equation of a circle with centre at the origin.
- I can find the equation of a tangent to a circle at a given point.

I can construct a box plot diagram using an appropriate scale.
I can read the median and quartiles and calculate the IQR and range from a box plot diagram - I can compare sets of data using cumulative frequency polygons and box plot diagrams.

## Set theory.

I can read and understand set theory notation.
I can write and apply set theory notation to my solutions.

## Venn diagrams

- I can read information from a venn diagram
- I can annotate a venn diagram using the information given in a question.
- I can use venn diagrams to solve problems with algebra
- I can use venn diagrams to aid in solving conditional probability questions.

Construction and interpretation of histograms.
I can construct histograms with equal class widths

- I can calculate frequency density given the frequencies and class widths in a table.
- I can draw histograms with unequal class widths
- I can calculate frequency density and frequencies from a histogram diagram
I can interpret histograms to solve problems.

| Key Assessment Task (KAT) | Key Assessment Task (KAT) | Key Assessment Task (KAT) | Key Assessment Task (KAT) | Key Assessment Task (KAT) | Key Assessment Task (KAT) |
| :---: | :---: | :---: | :---: | :---: | :---: |
| In class test on recent content (week beginning 2nd October) | In class test on recent content (week beginning 11th December) | Major Assessment - <br> One full GCSE calculator paper Week beginning 29th January | In class test on recent content (week beginning 11th March) | In class test on recent content (week beginning 22nd April) | Major Assessment (week beginning 24th June) |

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| Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Unit of Work/Big Question | Unit of Work/Big Question | Unit of Work/Big Question | Unit of Work/Big Question | Unit of Work/Big Question | Unit of Work/Big Question |
| - Algebra: manipulation revision, completing the square, proof, numerical methods, simultaneous equations, graphs <br> - Number: Surds revision | - Number/Algebra: inequalities, upper and lower bounds <br> - Geometry: Circle theorems, vectors <br> - Algebra/Geometry: Rates of change | - Geometry: trigonometry in any triangles, bearings, Area under a curve, motion graphs, <br> - Number: Algebraic fractions <br> - Algebra: Sketching graphs | - Geometry: Transforming functions, Constructions and Loci <br> - Statistics: Probability <br> - Algebra: Growth and Decay | N/A | N/A |
| Knowledge | Knowledge | Knowledge | Knowledge | Knowledge | Knowledge |
| - Expanding and Factorising <br> - Solving quadratic equations <br> - Completing the square <br> - Algebraic proof <br> - Numerical methods of solving equations <br> - Solving simultaneous equations <br> - Understanding graphs <br> - Calculating with surds | - Representing and solving inequalities <br> - Upper and lower bounds <br> - Circle theorems <br> - Finding rates of change from graphs <br> - Vectors <br> - TAILORED CONTENT BASED ON QLA AND SPARX, DIFFERING FOR EACH CLASS | - The sine and cosine rules (including bearings) <br> - Area under a curve and graphs of motion <br> - Algebraic fractions <br> - Sketching graphs of any function <br> - TAILORED CONTENT BASED ON QLA AND SPARX, DIFFERING FOR EACH CLASS | - Transforming graphs of functions <br> - Compass constructions <br> - Loci problems <br> - Probability revision <br> - Growth and decay (percentages) revision in context) <br> - TAILORED CONTENT BASED ON QLA AND SPARX, DIFFERING FOR EACH CLASS | - TAILORED REVISION BASED ON QLA AND SPARX, DIFFERING FOR EACH CLASS |  |
| Skills \& Procedural Knowledge | Skills \& Procedural Knowledge | Skills \& Procedural Knowledge | Skills \& Procedural Knowledge | Skills \& Procedural Knowledge | Skills \& Procedural Knowledge |
| Expanding and factorising <br> - I can expand products of two or more binomials <br> - I can factorise quadratic expressions <br> - I can factorise quadratics where the coefficient of $x^{2}$ is greater than 1. <br> Solving quadratic equations <br> -I can solve quadratics by factorising <br> -I can solve quadratics using the quadratic formula <br> Completing the square <br> -I can complete the square of a quadratic <br> - I can deduce the turning point | Representing and solving inequalities <br> - I can solve linear inequalities in one or two variables <br> - I can represent inequalities on a number line, or a graph using the correct conventional notation - I can solve quadratic inequalities <br> Upper and lower bounds <br> - I can use and interpret error intervals <br> - I can find the upper or lower bound of a multi-step problem in context <br> Circle theorems <br> -I can apply any of the circle | The sine and cosine rules (including bearings) <br> - I can apply the sine rule to find an unknown side/angle in a triangle <br> - I can use the cosine rule to find an unknown side in a triangle <br> - I can rearrange and apply the cosine rule to find an unknown angle <br> - I can use $\frac{1}{2} a b \sin C$ to find the area of a triangle <br> - I can apply bearings knowledge to trigonometry problems <br> Area under a curve and graphs of motion. <br> - I can find the area under a linear | Transforming graphs of functions <br> - I can sketch a graph of a translation of a function <br> - I can recognise a translation of a function (relate to completing the square) <br> - I can reflect graphs of functions <br> - I can recognise reflections of functions <br> Compass constructions <br> - I can construct bisectors of lines or angles using a pair of compasses - I can construct perpendicular lines from a given line <br> Loci | REVISION |  |


| point of a quadratic by completing the square <br> Algebraic proof <br> -I can manipulate algebraic identities <br> to find unknowns <br> - I can use algebra to construct and prove statements that involve, odd, even, consecutive and square numbers. <br> Numerical methods of solving equations <br> -I can use iteration techniques to solve equations numerically <br> - I can use the suffix notation and recursive formula <br> Solving simultaneous equations -I can solve two linear equations simultaneously <br> - I can solve simultaneous equations where one equation is linear and the other is a quadratic <br> - I can interpret the solution of simultaneous equations in graphical form <br> - I can set up and solve linear simultaneous equations from context <br> Understanding graphs <br> -I can identify and interpret roots of quadratics <br> - I can recognise the difference between linear, quadratic or cubic graphs <br> - I can solve real life graph problems <br> Calculating with surds <br> -I can simplify surds <br> -I can add, subtract, multiply and divide with surds. <br> -I can rationalise denominators <br> - I can apply surds to other areas of maths and leave my answer in surd form | theorems to identify unknown angles <br> -I can prove circle theorems using algebraic methods <br> Finding rates of change from graphs <br> - I can interpret the gradient of a straight line graph as a rate of change <br> - I can find the instantaneous rate of change by finding the gradient at a point on a curve <br> - I can find the average rate of change by finding the gradient of a chord between two points <br> Vectors <br> -I can use diagrammatic and column representation of vectors <br> -I can carry out addition or subtraction of vectors <br> -I can multiply vectors by scalars <br> -I can use vectors to construct geometric arguments <br> - I can use vectors to solve geometric problems involving other areas of mathematics such as ratio or parallel line properties | graph <br> - I can find the area under curves using triangles and trapezia to approximate <br> - I can interpret distance-time/speed-time graphs and how the areas in context <br> Algebraic fractions <br> - I can simplify algebraic fractions by finding common factors in the both the numerator and denominator <br> - I can add or subtract algebraic fractions <br> - I can solve equations (including quadratics) that one or more algebraic fractions <br> Sketching graphs. <br> - I can recognise and sketch graphs of quadratic or cubic functions <br> - I can recognise and sketch the graph of the reciprocal function - I can recognise and use the graph of exponential functions in the form $y=k^{x}$ where $k$ is positive <br> - I can recognise and draw trigonometric functions for angles of any size (in degrees). <br> - I can find alternative solutions to trigonometric equations using the graphs. | - I can recognise and use a circle around a point to find a certain distance away from a point <br> - I can find equidistant lines or points using compass constructions - I can solve loci problems involving multiple constructions and scales <br> Probability revision <br> - I can solve probability problems of combined independent events using different diagrams <br> - I can solve conditional probability problems, with a focus on probability trees diagrams and venn diagrams <br> Growth and decay <br> - I can work with multipliers in an iterative process to solve problems <br> - I can set up and solve growth problems with a focus on compound interest <br> - I can work with decay problems with multipliers smaller than 1 |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Key Assessment Task (KAT) | Key Assessment Task (KAT) | Key Assessment Task (KAT) | Key Assessment Task (KAT) | Key Assessment Task (KAT) | Key Assessment Task (KAT) |
| Full GCSE exam paper (week beginning 2nd October) | Full GCSE exam paper (week beginning 20th November) | Mocks: <br> Two full papers to be sat in January | Full GCSE exam paper (week beginning 18th March) | External Examination Paper 1 | External Examinations Paper 2 Paper 3 |

