

Mathematics

We believe that all our students can be mathematicians, who enjoy and excel in mathematics at all levels. All students, irrespective of ability, should be given the opportunity to achieve their full potential in mathematics.

We are aiming for all our students to be:

- Fluent in the fundamentals of mathematics so they can master the subject
- Good communicators by clearly explaining their thoughts and giving reasons
- Resilient problem solvers who have the confidence to try and try again
- Committed to the 'why', not just the 'how'

At Cornwallis Academy, we teach the National Curriculum for Mathematics, which aims to ensure that all pupils:

- become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils have conceptual understanding and can recall and apply their knowledge rapidly and accurately to problems
- reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions

Year 10 Mathematics

Term One

Content of study	Ratio and Proportion (Foundation & Higher) Compound Measures (Foundation & Higher) Probability (Higher)
What are the aims and objectives of this term?	Ratio and Proportion: • To use ratio notation • To write a ratio in its simplest form • To write ratios in the form of 1:n • To recognise and use proportion to solve problems • To divide an amount by a given ratio • To combine ratios and fractions • To convert between units of area and volume • To recognise and use proportion on graphs • To write and use equations to solve problems involving direct proportion (higher only) • To solve problems involving square and cubic proportionality (higher only) • To write and use equations to solve problems involving inverse proportion (higher only) • To recognise and use graphs showing direct and inverse proportion (higher only) Compound Measures: • To perform calculations involving speed, distance and time • To use kinematic equations • To perform calculations involving mass, density and volume

	- To perform calculations involving pressure, force and area Probability: - To calculate the probability of a single event - To complete and use frequency trees - To calculate the relative frequency of an event - To estimate how many times an event will occur - To identify mutually exclusive outcomes and events - To find the probabilities of mutually exclusive outcomes and events - To use set notation - To use Venn Diagrams to calculate conditional probability - To use AND/OR rules to calculate the probability of combined events - To complete and use probability tree diagrams
What previous knowledge is required?	Number: - N1 order positive and negative integers, decimals and fractions; use the symbols $=$, $\neq$, $<$, $>$, $\leq$, $\geq$ - N2 apply the four operations, including formal written methods, to integers, decimals and simple fractions (proper and improper), and mixed numbers – all both positive and negative; understand and use place value - N3 recognise and use relationships between operations, including inverse operations; use conventional notation for priority of operations, including brackets, powers, roots and reciprocals - N10 work interchangeably with terminating decimals and their corresponding fractions
How will this term's content help with future learning?	Number (Higher): - Defining surds - Adding, subtracting, multiplying and dividing surds - Simplifying surds - Rationalising denominators - Convert recurring decimals to fractions and vice versa - Upper and lower bounds - Error intervals Ratio and Proportion (Higher): - Algebraic direct proportion - Algebraic inverse proportion
Resources	- Tutorial videos for all topics and interactive questions available at Sparx Maths - Home All students provided with an account - Tutorial videos and practice exam questions available at www.mathsgenie.co.uk - Tutorial videos, practice questions and practice exam questions available at www.corbettmaths.com - Additional revision resources available at www.bbc.co.uk/bitesize - GCSE Revision Guides and Revision Workbooks available through Parent Pay
Links to the national curriculum/specification	Number What students need to learn: - N11 identify and work with fractions in ratio problems - N12 interpret fractions and percentages as operators Measures and accuracy What students need to learn:

	- N13 use standard units of mass, length, time, money and other measures (including standard compound measures) using decimal quantities where appropriate Ratio, proportion and rates of change <i>What students need to learn:</i> - R1 change freely between related standard units (e.g. time, length, area, volume/capacity, mass) and compound units (e.g. speed, rates of pay, prices, density, pressure) in numerical and algebraic contexts -R2 use scale factors, scale diagrams and maps - R3 express one quantity as a fraction of another, where the fraction is less than 1 or greater than 1 - R4 use ratio notation, including reduction to simplest form - R5 divide a given quantity into two parts in a given part: part or part: whole ratio; express the division of a quantity into two parts as a ratio; apply ratio to real contexts and problems (such as those involving conversion, comparison, scaling, mixing, concentrations) - R6 express a multiplicative relationship between two quantities as a ratio or a fraction - R7 understand and use proportion as equality of ratios - R8 relate ratios to fractions and to linear functions - R9 define percentage as 'number of parts per hundred'; interpret percentages and percentage changes as a fraction or a decimal, and interpret these multiplicatively; express one quantity as a percentage of another; compare two quantities using percentages; work with percentages greater than 100%; solve problems involving percentage change, including percentage increase/decrease and original value problems, and simple interest including in financial mathematics - R10 solve problems involving direct and inverse proportion, including graphical and algebraic representations - R11 use compound units such as speed, rates of pay, unit pricing, density and pressure - R12 compare lengths, areas and volumes using ratio notation; make links to similarity (including trigonometric ratios) and scale factors - R13 understand that X is inversely proportional to Y is equivalent to X is proportional to $1/Y$; interpret equations that describe direct and inverse proportion - R14 interpret the gradient of a straight-line graph as a rate of change; recognise and interpret graphs that illustrate direct and inverse proportion - R16 set up, solve and interpret the answers in growth and decay problems, including compound interest Probability <i>What students need to learn:</i> - P5 understand that empirical unbiased samples tend towards theoretical probability distributions, with increasing sample size - P6 enumerate sets and combinations of sets systematically, using tables, grids, Venn diagrams and tree diagrams - P7 construct theoretical possibility spaces for single and combined experiments with equally likely outcomes and use these to calculate theoretical probabilities
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	P8 calculate the probability of independent and dependent combined events, including using tree diagrams and other representations, and know the underlying assumptions
Assessments	Students will sit two separate topic tests during this unit. The first will be done halfway through the term and the second will be done at the end of the unit. Each test is accompanied by a Yellow Assessment Point (YAP) that students will use to review their performance in each question. The YAP also has information on Sparx Maths video clips and quizzes that are linked to each question. Following the assessment, students will watch the clips and complete the quizzes relating to any questions that were identified as needing attention. Students will then be required to complete a progress task to demonstrate improvement on their weak areas. During this term, Year 10 pupils will also sit a past GCSE Paper 1. In addition to the two topic tests done, this GCSE past paper will provide a more accurate and detailed evaluation of each pupil's progress during that term.
Term Two	
Content of study	Algebra (Foundation & Higher)
What are the aims and objectives of this term?	Foundation: - Expanding double brackets - Factorising a quadratic expression - Difference of two squares - Solving quadratic equations - Plotting quadratic graphs - Solving quadratic equations graphically - Solving simultaneous equations graphically - Solving simultaneous equations by elimination - Rearranging formulae Higher: - Solving quadratics with coefficient of x^2 not equal to 1 - Solving quadratics by using the quadratic formula - Solving quadratic by completing the square - Forming and solving quadratic equations - Plotting and sketching quadratic equations - Solving quadratic equations graphically - Forming and solving simultaneous equations by elimination - Forming and solving simultaneous equations graphically - Solving simultaneous equations with one quadratic - Plotting graphs on inequalities and solving graphically - Solving quadratic inequalities
What previous knowledge is required?	Foundation - A2 substitute numerical values into formulae and expressions, including scientific formulae - A3 understand and use the concepts and vocabulary of expressions, equations, formulae, identities, inequalities, terms and factors

	• A5 understand and use standard mathematical formulae; rearrange formulae to change the subject • A6 know the difference between an equation and an identity; argue mathematically to show algebraic expressions are equivalent, and use algebra to support and construct arguments • A7 where appropriate, interpret simple expressions as functions with inputs and outputs. • A17 solve linear equations in one unknown algebraically (including those with the unknown on both sides of the equation); find approximate solutions using a graph • A18 solve quadratic equations algebraically by factorising; find approximate solutions using a graph • A21 translate simple situations or procedures into algebraic expressions or formulae; derive an equation (or two simultaneous equations), solve the equation(s) and interpret the solution • A22 solve linear inequalities in one variable; represent the solution set on a number line Higher • A4 simplify and manipulate algebraic expressions (including those involving surds and algebraic fractions) by: ○ collecting like terms ○ multiplying a single term over a bracket ○ taking out common factors ○ expanding products of two or more binomials • A5 understand and use standard mathematical formulae; rearrange formulae to change the subject • A6 know the difference between an equation and an identity; argue mathematically to show algebraic expressions are equivalent
How will this term's content help with future learning?	Graphs Foundation • A8 work with coordinates in all four quadrants • A9 plot graphs of equations that correspond to straight-line graphs in the coordinate plane; use the form $y = mx + c$ to identify parallel lines; find the equation of the line through two given points or through one point with a given gradient • A10 identify and interpret gradients and intercepts of linear functions graphically and algebraically • A11 identify and interpret roots, intercepts, turning points of quadratic functions graphically; deduce roots algebraically • A12 recognise, sketch and interpret graphs of linear functions, quadratic functions, simple cubic functions, the reciprocal function $y = 1/x$ with $x \neq 0$ • A14 plot and interpret graphs (including reciprocal graphs) and graphs of non-standard functions in real contexts to find approximate solutions to problems such as simple kinematic problems involving distance, speed and acceleration Higher • A12 recognise, sketch and interpret graphs of linear functions, quadratic functions, simple cubic functions, the reciprocal function $y = 1/x$ with $x \neq 0$, exponential functions $y = kx$ for positive values of k, and the trigonometric functions (with arguments in degrees) $y = \sin x$, $y = \cos x$ and $y = \tan x$ for angles of any size

	A13 sketch translations and reflections of a given function
Resources	- Tutorial videos for all topics and interactive questions available at Sparx Maths - Home All students provided with an account - Tutorial videos and practice exam questions available at www.mathsgenie.co.uk - Tutorial videos, practice questions and practice exam questions available at www.corbettmaths.com - Additional revision resources available at www.bbc.co.uk/bitesize - GCSE Revision Guides and Revision Workbooks available through Parent Pay
Links to the specification	What students need to learn: Foundation - A4 simplify and manipulate algebraic expressions (including those involving surds) by: - expanding products of two binomials - factorising quadratic expressions of the form $x^2 + bx + c$, including the difference of two squares; - simplifying expressions involving sums, products and powers, including the laws of indices - A17 solve linear equations in one unknown algebraically (including those with the unknown on both sides of the equation); find approximate solutions using a graph - A18 solve quadratic equations algebraically by factorising; find approximate solutions using a graph - A19 solve two simultaneous equations in two variables (linear/linear algebraically; find approximate solutions using a graph - A21 translate simple situations or procedures into algebraic expressions or formulae; derive an equation (or two simultaneous equations), solve the equation(s) and interpret the solution - A22 solve linear inequalities in one variable; represent the solution set on a number line Higher - A4 simplify and manipulate algebraic expressions (including those involving surds and algebraic fractions) by: - factorising quadratic expressions of the form $x^2 + bx + c$, including the difference of two squares; factorising quadratic expressions of the form $ax^2 + bx + c$ - simplifying expressions involving sums, products and powers, including the laws of indices Solving equations Foundation - A19 solve two simultaneous equations in two variables (linear/linear algebraically; find approximate solutions using a graph Higher - A18 solve quadratic equations (including those that require rearrangement) algebraically by factorising, by completing the square and by using the quadratic formula; find approximate solutions using a graph - A19 solve two simultaneous equations in two variables (linear/linear or linear/quadratic) algebraically; find approximate solutions using a graph - A20 find approximate solutions to equations numerically using iteration

	- A21 translate simple situations or procedures into algebraic expressions or formulae; derive an equation (or two simultaneous equations), solve the equation(s) and interpret the solution - A22 solve linear inequalities in one or two variable(s), and quadratic inequalities in one variable; represent the solution set on a number line, using set notation and on a graph Graphs Higher - A11 identify and interpret roots, intercepts, turning points of quadratic functions graphically; deduce roots algebraically and turning points by completing the square
Assessments	Students will sit two separate topic tests during this unit. The first will be done halfway through the term and the second will be done at the end of the unit. Each test is accompanied by a Yellow Assessment Point (YAP) that students will use to review their performance in each question. The YAP also has information on Sparx Maths video clips and quizzes that are linked to each question. Following the assessment, students will watch the clips and complete the quizzes relating to any questions that were identified as needing attention. Students will then be required to complete a progress task to demonstrate improvement on their weak areas.
Term Three	
Content of study	Geometry, Inequalities and Sequences
What are the aims and objectives of this term?	Geometry - Identifying congruent shapes - Identifying similar shapes and calculating missing lengths - Defining and using vectors Inequalities - Representing inequalities on number lines - Forming and solving linear inequalities Sequences - Generating sequences - Recognising different types of sequences - Finding the term-to-term rule - Finding and using the nth term Geometry (Higher only) - Identifying congruent triangles - Similarity – length, area and volume scale factor - Solving problems with vectors - Calculating missing angles and sides in 3D right-angled triangles - Calculating missing angles and sides using the sine rule - Calculating missing angles and sides using the cosine rule - Calculating area of a triangle using sine - Sketching sine, cosine and tangent graphs Sequences (Higher only) - Generating terms in Fibonacci sequences

	- Generating term in quadratic sequences - Finding the nth term in quadratic sequences - Generating terms in geometric sequences - Finding the nth term in geometric sequences
What previous knowledge is required?	Previous knowledge as given in specification Geometry - G1 use conventional terms and notation: points, lines, vertices, edges, planes, parallel lines, perpendicular lines, right angles, polygons, regular polygons and polygons with reflection and/or rotation symmetries; use the standard conventions for labelling and referring to the sides and angles of triangles; draw diagrams from written description - G2 use the standard ruler and compass constructions (perpendicular bisector of a line segment, constructing a perpendicular to a given line from/at a given point, bisecting a given angle); use these to construct given figures and solve loci problems; know that the perpendicular distance from a point to a line is the shortest distance to the line - G4 derive and apply the properties and definitions of special types of quadrilaterals, including square, rectangle, parallelogram, trapezium, kite and rhombus; and triangles and other plane figures using appropriate language Equations and Inequalities - A17 solve linear equations in one unknown algebraically (including those with the unknown on both sides of the equation); find approximate solutions using a graph - A18 solve quadratic equations algebraically by factorising; find approximate solutions using a graph
How will this term's content help with future learning?	Geometry - G14 use standard units of measure and related concepts (length, area, volume/capacity, mass, time, money, etc.) - G15 measure line segments and angles in geometric figures, including interpreting maps and scale drawings and use of bearings - G16 know and apply formulae to calculate: area of triangles, parallelograms, trapezia; volume of cuboids and other right prisms (including cylinders) - G17 know the formulae: circumference of a circle = $2\pi r = \pi d$, area of a circle = πr^2; calculate: perimeters of 2D shapes, including circles; areas of circles and composite shapes; surface area and volume of spheres, pyramids, cones and composite solids - G18 calculate arc lengths, angles and areas of sectors of circles
Resources	- Tutorial videos for all topics and interactive questions available at Sparx Maths - Home All students provided with an account - Tutorial videos and practice exam questions available at www.mathsgenie.co.uk - Tutorial videos, practice questions and practice exam questions available at www.corbettmaths.com - Additional revision resources available at www.bbc.co.uk/bitesize - GCSE Revision Guides and Revision Workbooks available through Parent Pay
Links to the specification	What students need to learn: Geometry - G5 use the basic congruence criteria for triangles (SSS, SAS, ASA, RHS) - G6 apply angle facts, triangle congruence, similarity and properties of quadrilaterals to conjecture and derive results about angles and sides, including Pythagoras' theorem and the fact that the base angles of an isosceles triangle are equal, and use known results to obtain simple proofs

	- G7 identify, describe and construct congruent and similar shapes, including on coordinate axes, by considering rotation, reflection, translation and enlargement (including fractional scale factors) - G24 describe translations as 2D vectors - G25 apply addition and subtraction of vectors, multiplication of vectors by a scalar, and diagrammatic and column representations of vectors Inequalities - A22 solve linear inequalities in one variable; represent the solution set on a number line Sequences - A23 generate terms of a sequence from either a term-to-term or a position-to-term rule - A24 recognise and use sequences of triangular, square and cube numbers, simple arithmetic progressions, Fibonacci type sequences, quadratic sequences, and simple geometric progressions (r^n where n is an integer, and r is a rational number > 0) - A25 deduce expressions to calculate the nth term of linear sequences Geometry (Higher only) - G19 apply the concepts of congruence and similarity, including the relationships between lengths, areas and volumes in similar figures --G20 know the formulae for: Pythagoras' theorem $a^2 + b^2 = c^2$, and the trigonometric ratios, $\sin \theta = \frac{\text{opposite}}{\text{hypotenuse}}$, $\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}}$ and $\tan \theta = \frac{\text{opposite}}{\text{adjacent}}$; apply them to find angles and lengths in right-angled triangles and, where possible, general triangles in two and three dimensional figures - G21 know the exact values of $\sin \theta$ and $\cos \theta$ for $\theta = 0^\circ, 30^\circ, 45^\circ, 60^\circ$ and 90°; know the exact value of $\tan \theta$ for $\theta = 0^\circ, 30^\circ, 45^\circ$ and 60° - G22 know and apply the sine rule $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$, and cosine rule $a^2 = b^2 + c^2 - 2bc \cos A$, to find unknown lengths and angles - G23 know and apply Area $= \frac{1}{2} ab \sin C$ to calculate the area, sides or angles of any triangle Sequences (Higher only) - A24 recognise and use sequences of triangular, square and cube numbers, simple arithmetic progressions, Fibonacci type sequences, quadratic sequences, and simple geometric progressions (r^n where n is an integer, and r is a rational number > 0 or a surd) and other sequences - A25 deduce expressions to calculate the nth term of linear and quadratic sequences
Assessments	Students will sit two separate topic tests during this unit. The first will be done halfway through the term and the second will be done at the end of the unit. Each test is accompanied by a Yellow Assessment Point (YAP) that students will use to review their performance in each question. The YAP also has information on Sparx Maths video clips and quizzes that are linked to each question. Following the assessment, students will watch the clips and complete the quizzes relating to any questions that were identified as needing attention. Students will then be required to complete a progress task to demonstrate improvement on their weak areas.

	During this term, Year 10 pupils will also sit a past GCSE Paper 2. In addition to the two topic tests done, this GCSE past paper will provide a more accurate and detailed evaluation of each pupil's progress during that term.
Term Four	
Content of study	Standard Form and Statistics
What are the aims and objectives of this term?	Statistics • Two-way tables • Mean, median, mode and range from a list • Mean, median, mode and range from an ungrouped frequency table • Modal class, median class and range from a grouped frequency table • Estimated mean from a grouped frequency table • Bar charts • Pictograms • Time series graphs • Stem and leaf diagrams • Frequency polygons • Pie charts • Scatter graphs • Misleading graphs Standard form • Write large numbers in standard form and vice versa • Write small numbers in standard form and vice versa • Calculating with numbers in standard form Statistics (Higher only) • Cumulative frequency curves • Box plots • Histograms • Stratified sampling
What previous knowledge is required?	Previous knowledge as given in specification Standard form • N2 apply the four operations, including formal written methods, to integers, decimals and simple fractions (proper and improper), and mixed numbers – all both positive and negative; understand and use place value (e.g. when working with very large or very small numbers, and when calculating with decimals) • N6 use positive integer powers and associated real roots (square, cube and higher), recognise powers of 2, 3, 4, 5 • N7 calculate with roots, and with integer indices Statistics • S2 interpret and construct tables, charts and diagrams, including frequency tables, bar charts, pie charts and pictograms for categorical data, vertical line charts for ungrouped discrete numerical data, tables and line graphs for time series data and know their appropriate use

How will this term's content help with future learning?	Standard form - N7 calculate with roots, and with integer and fractional indices- Statistics - Variance and standard deviation - Linear regression and correlation - Binomial distribution - Normal distribution - Confidence intervals
Resources	- Tutorial videos for all topics and interactive questions available at Sparx Maths - Home All students provided with an account - Tutorial videos and practice exam questions available at www.mathsgenie.co.uk - Tutorial videos, practice questions and practice exam questions available at www.corbettmaths.com - Additional revision resources available at www.bbc.co.uk/bitesize - GCSE Revision Guides and Revision Workbooks available through Parent Pay
Links to the specification	What students need to learn: Standard form - N9 calculate with and interpret standard form $A \times 10^n$, where $1 \leq A < 10$ and n is an integer Statistics - S4 interpret, analyse and compare the distributions of data sets from univariate empirical distributions through: - appropriate graphical representation involving discrete, continuous and grouped data, including box plots - appropriate measures of central tendency (median, mean, mode and modal class) and spread (range, including consideration of outliers, quartiles and inter-quartile range) - S6 use and interpret scatter graphs of bivariate data; recognise correlation and know that it does not indicate causation; draw estimated lines of best fit; make predictions; interpolate and extrapolate apparent trends while knowing the dangers of so doing Higher, Statistics (Higher only) - S1 infer properties of populations or distributions from a sample, while knowing the limitations of sampling - S3 construct and interpret diagrams for grouped discrete data and continuous data, i.e. histograms with equal and unequal class intervals and cumulative frequency graphs, and know their appropriate use - S4 interpret, analyse and compare the distributions of data sets from univariate empirical distributions through: - appropriate graphical representation involving discrete, continuous and grouped data, including box plots - appropriate measures of central tendency (median, mean, mode and modal class) and spread (range, including consideration of outliers, quartiles and inter-quartile range) - S5 apply statistics to describe a population
Assessments	Students will sit two separate topic tests during this unit. The first will be done halfway through the term and the second will be done at the end of the unit. Each test is accompanied

	by a Yellow Assessment Point (YAP) that students will use to review their performance in each question. The YAP also has information on Sparx Maths video clips and quizzes that are linked to each question. Following the assessment, students will watch the clips and complete the quizzes relating to any questions that were identified as needing attention. Students will then be required to complete a progress task to demonstrate improvement on their weak areas.
Term Five	
Content of study	Probability Trigonometry (Higher only) Algebra (Higher only)
What are the aims and objectives of this term?	Probability • Calculating probability • Calculating mutually exclusive events • Two-way tables and probability • Sample space diagrams • Experimental probability • Venn diagrams • Frequency trees • Tree diagrams Trigonometry • Graph of sine function • Graph of cosine function • The tangent function • Transforming trigonometric graphs Algebra • Rearranging formulae • Algebraic fractions • Simplifying algebraic fractions • Surds • Solving algebraic fraction equations • Functions
What previous knowledge is required?	Previous knowledge as given in specification Probability • P1 record, describe and analyse the frequency of outcomes of probability experiments using tables and frequency trees • P2 apply ideas of randomness, fairness and equally likely events to calculate expected outcomes of multiple future experiments Trigonometry • G20 know the formulae for: Pythagoras' theorem $a^2 + b^2 = c^2$, and the trigonometric ratios, $\sin \theta = \text{opposite} / \text{hypotenuse}$, $\cos \theta = \text{adjacent} / \text{hypotenuse}$ and $\tan \theta = \text{opposite} / \text{adjacent}$; apply them to find angles and lengths in right-angled triangles in two-dimensional figures
How will this term's content	Probability • P9 calculate and interpret conditional probabilities through representation using expected frequencies with two-way tables, tree diagrams and Venn diagrams

help with future learning?	Trigonometry G22 know and apply the sine rule $a/\sin A = b/\sin B = c/\sin C$, and cosine rule $a^2 = b^2 + c^2 - 2bc \cos A$, to find unknown lengths and angles G23 know and apply Area = $\frac{1}{2} ab \sin C$ to calculate the area, sides or angles of any triangle
Resources	- Tutorial videos for all topics and interactive questions available at Sparx Maths - Home All students provided with an account - Tutorial videos and practice exam questions available at www.mathsgenie.co.uk - Tutorial videos, practice questions and practice exam questions available at www.corbettmaths.com - Additional revision resources available at www.bbc.co.uk/bitesize - GCSE Revision Guides and Revision Workbooks available through Parent Pay
Links to the specification	What students need to learn: Probability - P1 record, describe and analyse the frequency of outcomes of probability experiments using tables and frequency trees - P2 apply ideas of randomness, fairness and equally likely events to calculate expected outcomes of multiple future experiments - P3 relate relative expected frequencies to theoretical probability, using appropriate language and the 0-1 probability scale - P4 apply the property that the probabilities of an exhaustive set of outcomes sum to one; apply the property that the probabilities of an exhaustive set of mutually exclusive events sum to one - P5 understand that empirical unbiased samples tend towards theoretical probability distributions, with increasing sample size - P6 enumerate sets and combinations of sets systematically, using tables, grids, Venn diagrams and tree diagrams - P7 construct theoretical possibility spaces for single and combined experiments with equally likely outcomes and use these to calculate theoretical probabilities - P8 calculate the probability of independent and dependent combined events, including using tree diagrams and other representations, and know the underlying assumptions Trigonometry - G21 know the exact values of $\sin \theta$ and $\cos \theta$ for $\theta = 0^\circ, 30^\circ, 45^\circ, 60^\circ$ and 90°; know the exact value of $\tan \theta$ for $\theta = 0^\circ, 30^\circ, 45^\circ$ and 60° Algebra - A7 where appropriate, interpret simple expressions as functions with inputs and outputs; interpret the reverse process as the 'inverse function'; interpret the succession of two functions as a 'composite function' (the use of formal function notation is expected)
Assessments	Students will sit two separate topic tests during this unit. The first will be done halfway through the term and the second will be done at the end of the unit. Each test is accompanied by a Yellow Assessment Point (YAP) that students will use to review their performance in each question. The YAP also has information on Sparx Maths video clips and quizzes that are linked to each question. Following the assessment, students will watch the clips and complete the quizzes relating to any questions that were identified as needing attention. Students will then be required to complete a progress task to demonstrate improvement on their weak areas.

	During this term, Year 10 pupils will also sit a full suite of GCSE papers for their PPE. In addition to the two topic tests done, these GCSE papers will provide a more accurate and detailed evaluation of each pupil's progress during that term.
Term Six	
Content of study	Recap, Retrieval and Consolidation 3D Shapes, Transformations and Circle theorems (Higher only)
What are the aims and objectives of this term?	Recap, retrieval and consolidation Selected topics identified from the analysis of data collected from the end of topics assessments and GCSE past papers assessments done throughout the school year. Geometry • Properties of 3D shapes • Plans and elevations • Reflection and rotation • Enlargement • Combination of transformations • Bearings and scale diagrams • Constructions and loci • Circle theorem – angles, radii, tangents and chords • Circle theorem – application and proof
What previous knowledge is required?	Previous knowledge as given in specification Geometry • G4 derive and apply the properties and definitions of special types of quadrilaterals, including square, rectangle, parallelogram, trapezium, kite and rhombus; and triangles and other plane figures using appropriate language • G9 identify and apply circle definitions and properties, including: centre, radius, chord, diameter, circumference, tangent, arc, sector and segment • -G16 know and apply formulae to calculate: area of triangles, parallelograms, trapezia; volume of cuboids and other right prisms (including cylinders) • G17 know the formulae: circumference of a circle = $2\pi r = \pi d$, area of a circle = πr^2; calculate: perimeters of 2D shapes, including circles; areas of circles and composite shapes; surface area and volume of spheres, pyramids, cones and composite solids
How will this term's content help with future learning?	Geometry • G18 calculate arc lengths, angles and areas of sectors of circles
Resources	• Tutorial videos for all topics and interactive questions available at Sparx Maths - Home All students provided with an account • Tutorial videos and practice exam questions available at www.mathsgenie.co.uk • Tutorial videos, practice questions and practice exam questions available at www.corbettmaths.com • Additional revision resources available at www.bbc.co.uk/bitesize • GCSE Revision Guides and Revision Workbooks available through Parent Pay
Links to the specification	What students need to learn: Geometry

	• G1 use conventional terms and notation: points, lines, vertices, edges, planes, parallel lines, perpendicular lines, right angles, polygons, regular polygons and polygons with reflection and/or rotation symmetries; use the standard conventions for labelling and referring to the sides and angles of triangles; draw diagrams from written description • G2 use the standard ruler and compass constructions (perpendicular bisector of a line segment, constructing a perpendicular to a given line from/at a given point, bisecting a given angle); use these to construct given figures and solve loci problems; know that the perpendicular distance from a point to a line is the shortest distance to the line • G8 describe the changes and invariance achieved by combinations of rotations, reflections and translations • G10 apply and prove the standard circle theorems concerning angles, radii, tangents and chords, and use them to prove related results • G12 identify properties of the faces, surfaces, edges and vertices of: cubes, cuboids, prisms, cylinders, pyramids, cones and spheres • G13 construct and interpret plans and elevations of 3D shapes • G15 measure line segments and angles in geometric figures, including interpreting maps and scale drawings and use of bearings
Assessments	Students will sit two separate topic tests during this unit. The first will be done halfway through the term and the second will be done at the end of the unit. Each test is accompanied by a Yellow Assessment Point (YAP) that students will use to review their performance in each question. The YAP also has information on Sparx Maths video clips and quizzes that are linked to each question. Following the assessment, students will watch the clips and complete the quizzes relating to any questions that were identified as needing attention. Students will then be required to complete a progress task to demonstrate improvement on their weak areas.