GCSE Mathematics Curriculum (Edexcel) – 2- Year Plan

Intent:
The intention of the mathematics curriculum is to provide all pupils with the depth of knowledge and mathematical skills to be able to solve new problems in unfamiliar situations. Pupils will be able to apply the techniques and skills learnt in mathematics lessons to their mathematical studies, all areas of the curriculum and everyday life.

Our **main aims** are to:

- **Live:** Ensure every pupil becomes **fluent** in the fundamentals of mathematics in order to make appropriate choices from a whole toolkit of methods, strategies and approaches preparing them for day to day life and the workplace
- **Love:** Ensure pupils have the relevant mathematical knowledge and skills to **think mathematically**, explore relationships and **connect** ideas
- **Learn:** Develop curious and creative learners who are intrigued by the **representations, structures and language of mathematics**

The study of mathematics at Edward Peake is underpinned by four main concepts: fluency; mathematical thinking; representations and structures; the language of mathematics. These four main concepts are at the heart of our delivery of Maths Mastery through the use of the White Rose scheme.

Fluency:

- Pupils quickly and efficiently recall facts and procedures
- Pupils move between different contexts confidently
- Pupils understand different representations of concepts
- Pupils recognise relationships and connections within mathematics
- Pupils have a toolkit of methods, strategies and approaches

Mathematical thinking:

- Pupils look for patterns to discern structure
- Pupils explore relationships and make connections between ideas
- Pupils reason logically
- Pupils explain and discuss ideas, conjectures and proofs

Representations and Structure:

- Pupils use a variety of representations to develop a deep understanding of concepts
- Pupils use Stem sentences to represent concepts
- Pupils use representations to understand and explore the structure of mathematics

Language of mathematics:

- Pupils are confident using mathematical language in their written work in maths lessons
- Pupils use mathematical language to discuss mathematics
- Pupils explain their reasoning using mathematical language

Prior Knowledge from Key Stage 3		
Number	Understand and Represent	• understand and use place value for decimals, measures and integers of any size • order positive and negative integers, decimals and fractions; use the number line as a model for ordering of the real numbers; use the symbols $=, \neq, <, >, \leq, \geq$ • use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation, including using product notation and the unique factorisation property • interpret and compare numbers in standard form $A \times 10^n, 1 \leq n < 10$ where n is a positive or negative integer or zero • round numbers and measures to an appropriate degree of accuracy [for example, to a number of decimal places or significant figures] • appreciate the infinite nature of the sets of integers, real and rational numbers.
	Calculations	• use the four operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative • use conventional notation for the priority of operations, including brackets, powers, roots • use standard units of time • recognise and use relationships between operations including inverse operations • use integer powers and associated real roots (square, cube and higher), recognise powers of 2, 3, 4, 5 and distinguish between exact representations of roots and their decimal approximations • use approximation through rounding to estimate answers and calculate possible resulting errors expressed using inequality notation $a < x \leq b$ • use a calculator and other technologies to calculate results accurately and then interpret them appropriately
	Understanding Fractions and Decimals	• work interchangeably with terminating decimals and their corresponding fractions (such as 3.5 and $\frac{7}{2}$ or 0.375 and $\frac{3}{8}$) • interpret fractions and percentages as operators • express one quantity as a fraction of another, where the fraction is less than 1 and greater than 1
	Percentages	• Define percentage as 'number of parts per hundred', interpret percentage changes as a fraction or a decimal, interpret these multiplicatively, express one quantity as a percentage of another, compare two quantities using percentages, and work with percentages greater than 100% • interpret fractions and percentages as operators • solve problems involving percentage change, including: percentage increase, decrease and original value problems and simple interest in financial mathematics

Algebra	Understanding Notation and Substitution	• use and interpret algebraic notation, including: ab in place of $a \times b$ $3y$ in place of $y + y + y$ and $3 \times y$ a^2 in place of $a \times a$ ab in place of $a \times b$ $\frac{a}{b}$ in place of $a \div b$ coefficients written as fractions rather than decimals brackets • substitute values into formulae expressions, rearrange and simplify expressions • understand and use the concepts and vocabulary of expressions, equations, inequalities, terms and factors
	Equivalence and Proof	• simplify and manipulate algebraic expressions to maintain equivalence by: ➢ multiplying a single term over a bracket ➢ taking out common factors ➢ expanding products of two or more binomials • understand and use the concepts and vocabulary of expressions, equations, inequalities, terms and factors
	Solving Equations and Inequalities	• understand and use the concepts and vocabulary of expressions, equations, inequalities, terms and factors • simplify and manipulate algebraic expressions to maintain equivalence by collecting like terms • understand and use standard mathematical formulae; rearrange formulae to change the subject • use algebraic methods to solve linear equations in one variable (including all forms that require rearrangement)
	Linear Graphs	• model situations or procedures by translating them into algebraic expressions or formulae and by using graphs • work with coordinates in all four quadrants • recognise, sketch and produce graphs of linear functions of one variable with appropriate scaling, using equations in x and y and the Cartesian plane • interpret mathematical relationships both algebraically and graphically • reduce a given linear equation in two variables to the standard form $y = mx + c$ • calculate and interpret gradients and intercepts of graphs of such linear equations numerically, graphically and algebraically • use linear graphs to estimate values of y for given values of x and vice versa and to find approximate solutions of simultaneous linear equations • find approximate solutions to contextual problems from given graphs of a variety of functions, including piece-wise linear

	Non-linear Graphs	• model situations or procedures by translating them into algebraic expressions or formulae and by using graphs • work with coordinates in all four quadrants • recognise, sketch and produce graphs of quadratic functions of one variable with appropriate scaling, using equations in x and y and the Cartesian plane • interpret mathematical relationships both algebraically and graphically • use quadratic graphs to estimate values of y for given values of x and vice versa • find approximate solutions to contextual problems from given graphs of a variety of functions, including piece-wise linear, exponential and reciprocal graphs
	Sequences	• 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
Ratio, Proportion and Rates of Change	Multiplicative Relationships	• change freely between related standard units [for example time, length, area, volume/capacity, mass] • use scale factors, scale diagrams and maps • understand that a multiplicative relationship between two quantities can be expressed as a ratio or a fraction • solve problems involving direct and inverse proportion, including graphical and algebraic representations
	Ratio and Rates	• use ratio notation, including reduction to simplest form • 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 • relate the language of ratios and the associated calculations to the arithmetic of fractions and to linear functions • use compound units such as speed, unit pricing and density to solve problems
Geometry and Measures	Perimeter, Area and Volume	• derive and apply formulae to calculate and solve problems involving: perimeter and area of triangles, parallelograms, trapezia, volume of cuboids (including cubes) and other prisms (including cylinders) • calculate and solve problems involving: perimeters of 2-D shapes (including circles), areas of circles and composite shapes

	Construct and Transform Geometric Figures	• draw and measure line segments and angles in geometric figures, including interpreting scale drawings • derive and 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); recognise and use the perpendicular distance from a point to a line as the shortest distance to the line • describe, sketch and draw using conventional terms and notations: points, lines, parallel lines, perpendicular lines, right angles, regular polygons, and other polygons that are reflectively and rotationally symmetric • identify properties of, and describe the results of, translations, rotations and reflections applied to given figures • use the standard conventions for labelling the sides and angles of triangle ABC • **identify and construct congruent triangles, and construct similar shapes by enlargement, with and without coordinate grids** • know and use the criteria for congruence of triangles
	Shape Properties	• derive and illustrate properties of triangles, quadrilaterals, circles, and other plane figures [for example, equal lengths and angles] using appropriate language and technologies • use the properties of faces, surfaces, edges and vertices of cubes, cuboids, prisms, cylinders, pyramids, cones and spheres to solve problems in 3-D
	Angles	• apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles • understand and use the relationship between parallel lines and alternate and corresponding angles • derive and use the sum of angles in a triangle and use it to deduce the angle sum in any polygon, and to derive properties of regular polygons
	Pythagoras and Trigonometry	• use Pythagoras' Theorem and trigonometric ratios in similar triangles to solve problems involving right-angled triangles
	Geometric Proof	• apply angle facts, triangle congruence, similarity and properties of quadrilaterals to derive results about angles and sides, including Pythagoras' Theorem, and use known results to obtain simple proofs • interpret mathematical relationships both algebraically and geometrically

Probability	Probability	• record, describe and analyse the frequency of outcomes of simple probability experiments involving randomness, fairness, equally and unequally likely outcomes, using appropriate language and the 0-1 probability scale • understand that the probabilities of all possible outcomes sum to 1 • enumerate sets and unions/intersections of sets systematically, using tables, grids and Venn diagrams • generate theoretical sample spaces for single and combined events with equally likely, mutually exclusive outcomes and use these to calculate theoretical probabilities
Statistics	Representing and Interpreting Data	• describe, interpret and compare observed distributions of a single variable through: appropriate graphical representation involving discrete, continuous and grouped data • construct and interpret appropriate tables, charts, and diagrams, including frequency tables, bar charts, pie charts, and pictograms for categorical data, and vertical line (or bar) charts for ungrouped and grouped numerical data
	Statistical Measures	• describe, interpret and compare observed distributions of a single variable through: appropriate graphical representation involving discrete, continuous and grouped data; and appropriate measures of central tendency (mean, mode, median) and spread (range, consideration of outliers)
	Bivariate Data	• describe simple mathematical relationships between two variables (bivariate data) in observational and experimental contexts and illustrate using scatter graphs

Resources:	Development:
White Rose workbooks Google Slides Online homework and revision – My Maths, Maths Watch, Transum Past papers and previous test questions Ninja Maths Protractor (180^0) Pair of compasses Scientific Calculator (available to purchase from school) Mathematical manipulatives (blocks, number lines, shapes etc)	Literacy: key mathematical vocabulary, oracy skills through explaining reasoning, interpretation of word problems Cross-curricular: graphs; reading scales; measuring, recording and analysing data; scales and co-ordinates; position and direction; ratio and proportion; formulae. Careers/outside of the classroom: essential in all walks of life Spiritual, Moral, Social and Cultural: appreciation of the wonder of maths in nature (S); ethical use of data, consequences of mathematical

	decisions (M); collaboration and teamwork, communication and reasoning, peer and self-assessment (S); mathematical concepts in different cultures, cultural significance of patterns and symbols, real-world and cultural contexts (C). Skills: problem solving, reasoning, collaboration, resilience, communication and critical thinking.

Curriculum Overview:

Year 10					
Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Similarity	Developing Algebra	Geometry	Proportions and Proportional Change	Delving into Data and Using Number	Using Number and Expressions
• Congruency, Similarity and Enlargement • Trigonometry	• Representing Solutions of Equations and Inequalities • Simultaneous Equations	• Angles and Bearings • Working with Circles • Vectors	• Ratios and Fractions • Percentages and Interest • Probability	• Collecting, Representing and Interpreting Data • Non-calculator Methods	• Types of Numbers and Sequences • Indices and Roots • Manipulating Expressions
Year 11					
Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Graphs	Algebra	Reasoning	Revision and Communication	Revision and Examinations	
• Gradients and Lines • Non-linear Graphs • Using Graphs	• Expanding and Factorising • Changing the Subject • Functions	• Multiplicative Reasoning • Geometric Reasoning • Algebraic Reasoning	• Transforming and Constructing • Listing and Describing • Show that . . .		

Assessment:
Daily formative assessment occurs through the Flashback starters, discussions and verbal questioning during lessons.

Summative assessments are carried out after each Unit of Learning and at the end of each term as well as a programme of mock exams.
For GCSE, pupils sit either the Foundation papers (Grades 1 – 5) or Higher papers (Grades 3 – 9), depending on ability.
The GCSE exam has 3 papers: 1 x calculator and 2 x non-calculator. Each test lasts 90 minutes and will be awarded 80 marks.

Scheme of Learning:

H denotes Higher Tier GCSE content
R Denotes 'review step' – content should have been covered at KS3

Year 10	
Autumn Term: Similarity	
Unit of Learning: Congruence, Similarity and Enlargement (Aut1)	
Lesson	
1	Enlarge a shape by a positive integer scale factor R
2	Enlarge a shape by a fractional scale factor R
3	Enlarge a shape by a negative scale factor H
4	Identify similar shapes
5	Work out missing sides and angles in a given pair of similar shapes
6	Use parallel line rules to work out missing angles R
7	Establish whether a pair of triangles are similar
8	Explore areas of similar shapes (1) H
9	Explore areas of similar shapes (2) H
10	Explore volumes of similar shapes H
11	Solve mixed problems involving similar shapes H
12	Understand the difference between congruence and similarity
13	Understand and use conditions for congruent triangles
14	Prove a pair of triangles are congruent H
15	Unit Assessment – Foundation or Higher

Year 10	
Autumn Term: Similarity	
Unit of Learning: Trigonometry (Aut2)	
Lesson	
1	Explore ratio in similar right-angled triangles
2	Work fluently with the hypotenuse, opposite and adjacent sides
3	Use the tangent ratio to find missing side lengths
4	Use the sine and cosine ratio to find missing side lengths
5	Use the sine, cosine and tangent to find missing side lengths
6	Use the sine, cosine and tangent to find missing angles
7	Calculate sides in right-angled triangles using Pythagoras' Theorem R
8	Select the appropriate method to solve right-angled triangle problems
9	Work with key angles in right-angled triangles
10	Use trigonometry in 3-D shapes H
11	Use the formula 1/2absinC to find the area of non-right-angled triangles H
12	Understand and use the sine rule to find missing lengths H
13	Understand and use the sine rule to find missing angles H
14	Understand and use the cosine rule to find missing lengths H
15	Understand and use the cosine rule to find missing angles H
16	Choose and use the sine and cosine rules H
17	Unit Assessment – Foundation or Higher

Year 10	
Autumn Term: Developing Algebra	
Unit of Learning: Representing solutions of equations & inequalities (Aut3)	
Lesson	
1	Understand the meaning of a solution
2	Form and solve one-step and two-step equations R
3	Form and solve one-step and two-step inequalities R
4	Show solutions to inequalities on a number line
5	Interpret representation on number lines as inequalities
6	Represent solutions to inequalities using set notation H
7	Draw straight line graphs R
8	Find solutions to equations using straight line graphs
9	Represent solutions to single inequalities on a graph H
10	Represent solutions to multiple inequalities on a graph H
11	Form and solve equations with unknowns on both sides R
12	Form and solve inequalities with unknowns on both sides
13	Form and solve more complex equations and inequalities
14	Solve quadratic equations by factorisation H
15	Solve quadratic inequalities in one variable H
16	Unit Assessment – Foundation or Higher

Year 10	
Autumn Term: Developing Algebra	
Unit of Learning: Simultaneous Equations (Aut4)	
Lesson	
1	Understand that equations can have more than one solution
2	Determine whether a given (x, y) is a solution to a pair of linear simultaneous equations
3	Solve a pair of linear simultaneous equations by substituting a known variable
4	Solve a pair of linear simultaneous equations by substituting an expression
5	Solve a pair of linear simultaneous equations using graphs
6	Solve a pair of linear simultaneous equations by subtracting equations
7	Solve a pair of linear simultaneous equations by adding equations
8	Use a given equation to derive related facts R
9	Solve a pair of linear simultaneous equations by adjusting one equation
10	Solve a pair of linear simultaneous equations by adjusting both equations
11	Form a pair of linear simultaneous equations from given information
12	Form and solve pair of linear simultaneous equations from given information
13	Determine whether a given (x, y) is a solution to both a linear and quadratic equation H
14	Solve a pair of simultaneous equations (one linear, one quadratic) using graphs H
15	Solve a pair of simultaneous equations (one linear, one quadratic) algebraically H
16	Solve a pair of simultaneous equations involving a third unknown H
17	Unit Assessment – Foundation or Higher

Year 10	
Spring Term: Geometry	
Unit of Learning: Angles and Bearings (Spr1)	
Lesson	
1	Use cardinal directions and related angles R
2	Draw and interpret scale diagrams R
3	Understand and represent bearings
4	Measure and read bearings
5	Make scale drawings using bearings
6	Calculate bearings using angle rules
7	Solve bearings problems using Pythagoras and trigonometry
8	Solve bearings problems using the sine and cosine rules H
9	Unit Assessment – Foundation or Higher

Year 10	
Spring Term: Geometry	
Unit of Learning: Working with Circles (Spr2)	
Lesson	
1	Recognise and label parts of a circle R
2	Calculate fractional parts of a circle
3	Calculate the length of an arc
4	Calculate the area of a sector
5	Circle theorem: Angles at the centre and circumference H
6	Circle theorem: Angles in a semi-circle H
7	Circle theorem: Angles in the same segment H
8	Circle theorem: Angles in a cyclic quadrilateral H
9	Understand and use the volume of a cylinder and cone
10	Understand and use the volume of a sphere
11	Understand and use the surface area of a sphere
12	Understand and use the surface area of a cylinder and cone
13	Solve area and volume problems involving similar shapes R H
14	Unit Assessment – Foundation or Higher

Year 10	
Spring Term: Geometry	
Unit of Learning: Vectors (Spr3)	
Lesson	
1	Understand and represent vectors
2	Use and read vector notation
3	Draw and understand vectors multiplied by a scalar
4	Draw and understand addition of vectors
5	Draw and understand addition and subtraction of vectors
6	Explore vector journeys in shapes H
7	Explore quadrilaterals using vectors H
8	Understand parallel vectors H
9	Explore co-linear points using vectors H
10	Use vectors to construct geometric arguments and proofs H
11	Unit Assessment – Foundation or Higher

Year 10	
Spring Term: Proportions and Proportional Change	
Unit of Learning: Ratios and Fractions (Spr4)	
Lesson	
1	Compare quantities using a ratio R
2	Link ratios and fractions R
3	Share in a ratio (given total or one part) R
4	Use ratios and fractions to make comparisons
5	Link ratios and graphs
6	Solve problems with currency conversion
7	Link ratios and scales R
8	Use and interpret ratios of the form 1 : n and n : 1
9	Solve best buy problems
10	Combine a set of ratios
11	Link ratio and algebra
12	Ratio in area problems H
13	Ratio in volume problems H
14	Mixed ratio problems
15	Unit Assessment – Foundation or Higher

Year 10	
Spring Term: Proportions and Proportional Change	
Unit of Learning: Percentages and Interest (Spr5)	
Lesson	
1	Convert and compare fractions, decimals and percentages R
2	Work out percentages of amounts (with and without a calculator) R
3	Increase and decrease by a given percentage R
4	Express one number as a percentage of another R
5	Calculate simple and compound interest
6	Repeated percentage change
7	Find the original value after a percentage change R
8	Solve problems involving growth and decay
9	Understand iterative processes H
10	Solve problems involving percentages, ratios and fractions
11	Unit Assessment – Foundation or Higher

Year 10	
Spring Term: Proportions and Proportional Change	
Unit of Learning: Probability (Spr6)	
Lesson	
1	Know how to add, subtract and multiply fractions R
2	Find probabilities using equally likely outcomes R
3	Use the property that probabilities sum to 1 R
4	Using experimental data to estimate probabilities
5	Find probabilities from tables, Venn diagrams and frequency trees
6	Construct and interpret sample spaces for more than one event R
7	Calculate probability with independent events
8	Use tree diagrams for independent events
9	Use tree diagrams for dependent events
10	Construct and interpret conditional probabilities (tree diagrams) H
11	Construct and interpret conditional probabilities (Venn diagrams and two-way tables) H
12	Unit Assessment – Foundation or Higher

Year 10	
Summer Term: Delving into Data	
Unit of Learning: Collecting, representing & interpreting data (Sum1)	
Lesson	
1	Understand populations and samples
2	Construct a stratified sample H
3	Primary and secondary data
4	Construct and interpret frequency tables and frequency polygons
5	Construct and interpret two-way tables R
6	Construct and interpret line and bar charts (including composite bar charts)
7	Construct and interpret pie charts R
8	Criticise charts and graphs
9	Construct histograms H
10	Interpret histograms H
11	Find and interpret averages from a list R
12	Find and interpret averages from a table R
13	Construct and interpret time series graphs R
14	Construct and interpret stem-and-leaf diagrams
15	Construct and interpret cumulative frequency diagrams H
16	Use cumulative frequency diagrams to find measures H
17	Construct and interpret box plots H
18	Compare distributions using charts and measures
19	Compare distributions using complex charts and measures H
20	Construct and interpret scatter graphs R
21	Draw and use a line of best fit R
22	Understand extrapolation
23	Unit Assessment – Foundation or Higher

Year 10	
Summer Term: Using Number	
Unit of Learning: Non-Calculator Methods (Sum2)	
Lesson	
1	Mental/written methods of integer/decimal addition and subtraction R
2	Mental/written methods of integer/decimal multiplication and division
3	The four rules of fraction arithmetic R
4	Exact answers
5	Rational and irrational numbers H
6	Understand and use surds H
7	Calculate with surds H
8	Rounding to decimal places and significant figures R
9	Estimating answers to calculations R
10	Understand and use limits of accuracy
11	Upper and lower bounds H
12	Use number sense
13	Solve financial maths problems
14	Break down and solve multi-step problems
15	Unit Assessment – Foundation or Higher

Year 10	
Summer Term: Using Number	
Unit of Learning: Types of Number and Sequences (Sum3)	
Lesson	
1	Understand the difference between factors and multiples R
2	Understand primes and express a number as a product of its prime factors R
3	Find the HCF and LCM of a set of numbers R
4	Describe and continue arithmetic and geometric sequences
5	Explore other sequences
6	Describe and continue sequences involving surds H
7	Find the rule for the nth term of a linear sequence R
8	Find the rule for the nth term of a quadratic sequence H
9	Unit Assessment – Foundation or Higher

Year 10	
Summer Term: Using Number	
Unit of Learning: Indices and Roots (Sum4)	
Lesson	
1	Square and cube numbers R
2	Calculate higher powers and roots
3	Powers of ten and standard form R
4	The addition and subtraction rules for indices R
5	Understand and use the power zero and negative indices
6	Work with powers of powers
7	Understand and use fractional indices H
8	Calculate with numbers in standard form R
9	Unit Assessment – Foundation or Higher

Year 10	
Summer Term: Expressions	
Unit of Learning: Manipulating Expressions (Sum5)	
Lesson	
1	Simplify algebraic expressions R
2	Use identities
3	Add and subtract simple algebraic fractions H
4	Add and subtract complex algebraic fractions H
5	Multiply and divide simple algebraic fractions H
6	Multiply and divide complex algebraic fractions H
7	Form and solve equations and inequalities with fractions
8	Solve equations with algebraic fractions H
9	Represent numbers algebraically
10	Algebraic arguments and proof
11	Unit Assessment – Foundation or Higher

Year 11	
Autumn Term: Graphs	
Unit of Learning: Gradients and Lines (Aut1)	
Lesson	
1	Equations of lines parallel to the axis R
2	Plot straight line graphs R
3	Interpret y=mx+c R
4	Find the equation of a straight line from a graph (1) R
5	Find the equation of a straight line from a graph (2)
6	Equation of a straight-line graph given one point and gradient
7	Equation of a straight-line graph given two points
8	Determine whether a point is on a line
9	Solve linear simultaneous equations graphically R
10	Explore perpendicular lines H
11	Find the equations of perpendicular lines H
12	Unit Assessment – Foundation or Higher

Year 11	
Autumn Term: Graphs	
Unit of Learning: Non-Linear Graphs (Aut2)	
Lesson	
1	Plot and read from quadratic graphs
2	Plot and read from cubic graphs
3	Plot and read from reciprocal graphs
4	Recognise graph shapes
5	Identify and interpret roots and intercepts of quadratics
6	Understand and use exponential graphs H
7	Find and use the equation of a circle centre 0 H
8	Find the equation of the tangent to any curve H
9	Unit Assessment – Foundation or Higher

Year 11	
Autumn Term: Graphs	
Unit of Learning: Using Graphs (Aut3)	
Lesson	
1	Reflect shapes in given lines R
2	Plot and read from cubic graphs
3	Plot and read from reciprocal graphs
4	Recognise graph shapes
5	Identify and interpret roots and intercepts of quadratics
6	Understand and use exponential graphs H
7	Find and use the equation of a circle centre 0 H
8	Find the equation of the tangent to any curve H
9	Unit Assessment – Foundation or Higher

Year 11	
Autumn Term: Algebra	
Unit of Learning: Expanding and Factorising (Aut4)	
Lesson	
1	Expand and factorise with a single bracket R
2	Expand binomials R
3	Factorise quadratic expressions
4	Factorise complex quadratic expressions H
5	Solve equations equal to 0
6	Solve quadratic equations by factorisation
7	Solve complex quadratic equations by factorisation H
8	Complete the square H
9	Solve quadratic equations using the quadratic formula H
10	Unit Assessment – Foundation or Higher

Year 11	
Autumn Term: Algebra	
Unit of Learning: Changing the Subject (Aut5)	
Lesson	
1	Solve linear equations R
2	Solve inequalities R
3	Form and solve equations and inequalities in the context of shape
4	Change the subject of a simple formula
5	Change the subject of a known formula
6	Change the subject of a complex formula
7	Change the subject where the subject appears more than once H
8	Solve equations by iteration H
9	Unit Assessment – Foundation or Higher

Year 11	
Autumn Term: Algebra	
Unit of Learning: Functions (Aut6)	
Lesson	
1	Use function machines R
2	Substitution into expressions and formulae R
3	Use function notation
4	Work with composite functions H
5	Work with inverse functions H
6	Graphs of quadratic functions
7	Solve quadratic inequalities H
8	Understand and use trigonometric functions
9	Unit Assessment – Foundation or Higher

Year 11	
Spring Term: Reasoning	
Unit of Learning: Multiplicative Reasoning (Spr1)	
Lesson	
1	Use scale factors R
2	Understand direct proportion
3	Construct complex direct proportion equations H
4	Calculate with pressure and density
5	Understand inverse proportion
6	Construct inverse proportion equations H
7	Ratio problems R
8	Unit Assessment – Foundation or Higher

Year 11	
Spring Term: Reasoning	
Unit of Learning: Geometric Reasoning (Spr2)	
Lesson	
1	Angles at a point R
2	Angles in parallel lines and shapes R
3	Exterior and interior angles of polygons R
4	Proving geometric facts
5	Solve problems involving vectors R
6	Review of circle theorems (H) R
7	Circle theorem - angle between radius and chord H
8	Circle theorem - angle between radius and tangent H
9	Circle theorem - two tangents from a point H
10	Circle theorem - alternate segment theorem H
11	Review Pythagoras' theorem and using trigonometric ratios R

12	Unit Assessment – Foundation or Higher
Year 11	
Spring Term: Reasoning	
Unit of Learning: Algebraic Reasoning (Spr3)	
Lesson	
1	Simplify complex expressions
2	Find the rule for the nth term of a linear sequence R
3	Find the rule for the nth term of a quadratic sequence R H
4	Use rules for sequences
5	Solve linear simultaneous equations R
6	Solve simultaneous equations with one quadratic R H
7	Formal algebraic proof H
8	Inequalities in two variables H
9	Unit Assessment – Foundation or Higher

Year 11	
Spring Term: Revision and Communication	
Unit of Learning: Transforming and Constructing (Spr4)	
Lesson	
1	Perform and describe line symmetry and reflection R
2	Perform and describe rotation and rotational symmetry R
3	Perform and describe translations of shapes R
4	Perform and describe enlargements of shapes R
5	Perform and describe negative enlargements of shapes R H
6	Identify transformations of shapes R
7	Perform and describe a series of transformations of shapes
8	Identify invariant points and lines H
9	Perform standard constructions using ruler and protractor or ruler and compasses R
10	Solve loci problems
11	Understand and use trigonometrical graphs H
12	Sketch and identify translations of the graph of a given function H
13	Sketch and identify reflections of the graph of a given function H
14	Unit Assessment – Foundation or Higher

Year 11	
Spring Term: Revision and Communication	
Unit of Learning: Listing and Describing (Spr5)	
Lesson	
1	Work with organised lists
2	Use the product rule for counting H
3	Sample spaces and probability R
4	Complete and use Venn diagrams R
5	Construct and interpret plans and elevations R
6	Use data to compare distributions R
7	Interpreting scatter graphs R
8	Unit Assessment – Foundation or Higher

Year 11	
Spring Term: Revision and Communication	
Unit of Learning: Show that . . . (Spr6)	
Lesson	
1	Show that with number
2	Show that with algebra
3	Show that with shape
4	Show that with angles
5	Show that with data
6	Show that with vectors H
7	Show that with congruent triangles
8	Form proof with congruent triangles H
9	Unit Assessment – Foundation or Higher