24/25 Maths Curriculum Roadmaps
Key Stages 3, 4 and 5

Maths Curriculum Roadmap - Year 7

Year 7

Autumn 1 - Key Learning Objectives
- Describe and continue sequences given diagrammatically and number forms, both linear and non-linear.
- Use and interpret algebraic notation.
- Understand equality and use fact families.
- Form and solve one-step equations and simplify expressions by collecting like terms.

End of Autumn

Autumn 2 – Key Learning Objectives
- Recognise place values and compare and order numbers.
- Round numbers to positive powers of ten and to one significant figure.
- Understand equivalent fractions.
- Convert between fractions, decimals and percentages.

Spring Term - Key Learning Objectives
- Use formal methods for addition, subtraction, multiplication and division of integers and decimals.
- Understand and use representations of directed numbers.
- Convert mixed numbers and improper fractions.
- Adding and subtracting fractions with the same and different denominators.

End of Spring

Summer 1 - Key Learning Objectives
- Draw and measure lines and angles accurately.
- Recognise types of triangle, quadrilateral and other polygons.
- Calculate and use angles at a point, angles on a straight line and vertically opposite angles.
- Calculate missing angles in triangles and quadrilaterals.

End of Summer

Summer 2 - Key Learning Objectives
- Know and use mental addition, subtraction, multiplication and division strategies for integers, decimals and fractions.
- Understand the probability scale and calculate the probability of a single event.
- Find and use multiples and identify factors of numbers and expressions.
- Calculate the HCF and LCM using common multiples and Venn diagrams.

Maths Curriculum Roadmap - Year 8

Year 8

Autumn 1 - Key Learning Objectives

- Understand the meaning and representation of ratio.
- Divide an amount into a given ratio.
- Solve problems involving direct proportion.
- Explore relationships between similar shapes.

End of Autumn

Autumn 2 – Key Learning Objectives

- Work with coordinates with all four coordinates.
- Identify and draw lines that are parallel to the axes.
- Draw and interpret scatter graphs.
- Understand and describe linear correlation.
- Read and interpret grouped, ungrouped frequency tables.
- Construct sample spaces for one or more events.
- Find probabilities from a sample space/two-way tables.
- Find probabilities from a Venn diagrams.

Spring 1 - Key Learning Objectives

- Simplifying algebraic expressions by multiplying/dividing indices.
- Exploring powers of powers (H).
- Convert fluently between key fractions decimals and percentages.
- Compare and order numbers in standard form.
- Add, subtract, multiply/divide numbers in standard form.
- Round numbers to powers of 10 and 1 significant figure/given number of decimal places.

End of Spring

Spring 2 - Key Learning Objectives

- Form algebraic expressions.
- Solve equations, including with brackets.
- Understand and solve simple inequalities.
- Identify and use formulae, expressions, identities and equations.
- Generate sequences given a rule in words.
- Find the rule for the nth term of a linear sequence (H).

Summer 1 - Key Learning Objectives

- Understand and use basic angle rules and notation.
- Investigate angles between parallel lines and the transversal.
- Identify and calculate with alternate and corresponding angles.
- Calculate the area of triangles, rectangles and parallelograms.
- Calculate the area of a trapezium.
- Calculate the perimeter and area of compound shapes.
- Recognise line symmetry.
- Reflect a shape in a diagonal line.

End of Summer

Summer 2 - Key Learning Objectives

- Draw and interpret pie charts.
- Understand and use the mean, median and mode.
- Find the mean from a grouped/ungrouped frequency table (H).
- Compare distributions using averages and the range.

Maths Curriculum Roadmap - Year 9

Year 9

Autumn 1 - Key Learning Objectives

- Plot straight line graphs, lines parallel to the *x* and *y* axes, understand and use $y = mx + c$.
- Forming and solving one step and two-step inequalities and equations.
- Forming and solving equations and inequalities in context.
- Substituting into formulae and equations.
- Testing conjectures about number and with algebra.

End of Autumn

Autumn 2 – Key Learning Objectives

- Know names of 2-D and 3-D shapes.
- Sketch and recognise nets of cuboids and other 3-D shapes.
- Plans and elevations.
- Find area of 2-D shapes, surface area and volume of prisms.
- Locus of distance from a point, from a line and from two points.
- Construct a perpendicular bisector and an angle bisector.
- Construct triangles from given information.
- Identify congruent figures.

Spring 1 - Key Learning Objectives

- Work with directed number, solve problems with integers and decimals.
- HCF and LCM.
- Adding, subtracting, multiplying and dividing fractions.
- Use the equivalence of fractions, decimals and percentages.
- Recognise and solve percentage problems, calculate simple and compound interest.

End of Spring

Summer 1 - Key Learning Objectives

- Recognise enlargement and similarity.
- Enlarge a shape by a positive integer scale factor from a point and using a fractional scale factor.
- Work out missing sides and angles in similar shapes.
- Solve problems with direct and inverse proportion.
- Solve 'best buy' problems.
- Solve speed, distance and time problems with and without a calculator.
- Use distance/time graphs.
- Solve problems with density, mass and volume.
- Solve flow problems and their graphs.

Spring 2 - Key Learning Objectives

Solving angles problems (using chains of reasoning).
Conjectures with angles and shapes.
Angles problems with algebra.
Rotate a shape about a point on a shape.

Translate points and shapes by a given vector.
Identify the hypotenuse of a right-angled triangle.
Calculate the missing sides in right-angled triangles.
Use Pythagoras theorem on coordinate axes.

End of Summer

Summer 2 - Key Learning Objectives

- Single event probability.
- Expected outcomes, independent events.
- Use diagrams to work out probabilities.
- Draw and interpret quadratic graphs.

Maths Curriculum Roadmap - Year 10 (Foundation)

Year 10

Autumn 1 - Key Learning Objectives

- Understand types of numbers and how to calculate with them including estimating.
- Use powers and roots.
- Notice patterns and manipulate algebraic forms through substitution and solve to find the value of an unknown.

End of Autumn

Autumn 2 – Key Learning Objectives

- Work out averages, interpret and construct tables and charts for continuous and discrete data.
- Convert between fractions, decimals and percentages and choose the correct form to solve problems.

Spring 1 - Key Learning Objectives

- Notice patterns and manipulate algebraic forms through substitution and solve to find the value of an unknown.
- Solve and interpret linear inequalities.
- Know and apply angles facts.

End of Spring

Spring 2 - Key Learning Objectives

- Work out averages and range and use them to compare data.
- Know and apply formulae to calculate area and perimeter of 2D shapes and 3D solids.

Summer 1 - Key Learning Objectives

- Plot graphs of a linear function on a four-quadrant grid and understand gradient and intercept.
- Plot real life graphs.
- Understand and apply ratio and proportionality to solve problems.

End of Summer

Summer 2 - Key Learning Objectives

- Recognise and apply Pythagoras' Theorem to solve problems.
- Recognise and apply the trigonometric ratios to solve problems.
- Know all possible and expected outcomes and combinations to events using different diagrams.

Maths Curriculum Roadmap - Year 10 (Higher)

Year 10

Autumn 1 - Key Learning Objectives

- Understand types of numbers and how to calculate with them including estimating. Work with standard form, surds and indices.
- Notice patterns and manipulate algebraic forms through substitution and solve to find the value of an unknown.
- Deduce expressions to calculate the nth term of linear and non-linear sequences.

End of Autumn

Autumn 2 - Key Learning Objectives

- Work out averages, interpret and construct tables and charts for continuous and discrete data.
- Solve ratio and proportion problems.
- Convert between fractions, decimals and percentages and choose the correct form to solve problems.

Spring 1 - Key Learning Objectives

- Know and apply angle facts of triangles, quadrilaterals and polygons including angles in parallel lines.
- Use Pythagoras' theorem and trigonometric ratios to solve problems involving right angled triangles.
- Plot linear functions on `a four-quadrant graph and understand gradients and intercepts.
- Plot non-linear functions and interpret roots, intercepts and turning points from the graph.
- Know how to find the equation of a circle and work out the tangent to the radius.

End of Spring

Summer 1 - Key Learning Objectives

- Solve quadratic equations using different algebraic methods.
- Solve simultaneous equations and interpret solutions graphically.
- Solve and interpret both linear and quadratic inequalities.
- Know all possible and expected outcomes and combinations to events using different diagrams, e.g. Venn.
- Use multiplicative relationship between two quantities to solve ratio, proportionality and percentages problems.
- Recognise and interpret graphs that illustrate direct and inverse proportion.

Spring 2 - Key Learning Objectives

- Apply and interpret limits of accuracy, including upper and lower bounds.
- Calculate: perimeters of 2D shapes, including circles; areas of circles and composite shapes; surface area and volume of spheres, pyramids, cones and prisms/composite solids.
- Describe the changes and invariance achieved by combinations of rotations, reflections and translation.
- Accurately draw different types of constructions and solve loci problems.

End of Summer

Summer 2 - Key Learning Objectives

- Use congruence and similarity properties to solve geometry problems.
- Recognise, sketch, interpret and use transformation of trigonometric functions.
- Know and apply trigonometric formulae to solve geometry problems.
- Know and apply Pythagoras's theorem in 3D shapes.

Maths Curriculum Roadmap - Year 11 (Foundation)

Year 11

Autumn 1 - Key Learning Objectives

- Use multiplicative relationship between two quantities to solve ratio, proportionality and percentages problems.
- Be able to transform shapes on a four-quadrant graph and describe transformations.
- Apply routine construction techniques to solve loci and bearing problems.

End of Autumn

Autumn 2 - Key Learning Objectives

- Work with circles and 3D shapes.
- Solve quadratic equations algebraically by factorising.
- Calculate with roots, Fractions and numbers in standard form.
- Plot non-linear and interpret roots, intercepts and turning points from the graph.

Spring 1 - Key Learning Objectives

- Use congruence and similarity properties to solve geometry problems.
- Apply addition, subtraction and multiplication of vectors and use proof to show equivalent expressions.
- Plot linear functions on a four-quadrant graph and understand gradients and intercepts.
- Plot non-linear and interpret roots, intercepts and turning points from the graph.
- Solve two simultaneous equations algebraically and graphically.
- Change the subject of a formula.

End of Spring

Spring 2 - Key Learning Objectives

Revision - Preparations for final Summer Exams

End of Summer

Summer Term - Key Learning Objectives

Revision and Exam practice - Commencement of Summer Exams

Maths Curriculum Roadmap - Year 11 (Higher)

Year 11

Autumn 1 - Key Learning Objectives

- Interpret and construct diagrams for grouped discrete and continuous data (Histograms, Box plots and Cumulative frequency).
- Solve quadratic equations using different methods.
- Solve quadratic simultaneous equations and interpret solutions graphically.
- Solve and interpret both linear and quadratic inequalities.

End of Autumn

Autumn 2 - Key Learning Objectives

- Apply and prove circle theorems.

- Manipulating formulae, solving fractional equations, and rationalising surds.

Spring 1 - Key Learning Objectives

- Use vectors to construct geometric argument and proof.
- Plot and interpret reciprocal and exponential graphs.
- Calculate gradient and area under graphs.
- Recognise direct and inverse proportionality graphs.

End of Spring

Spring 2 - Key Learning Objectives

Revision - Preparations for final Summer Exams

End of Summer

Summer Term - Key Learning Objectives

Revision and Exam practice - Commencement of Summer Exams

Autumn 1 - Key Learning Objectives

Pure 1

Algebraic expressions
Quadratics
Equations and inequalities

Graphs and transformations
Straight line graphs
Circles and Algebraic methods

Statistics 1:

Data collection

Autumn 2 - Key Learning Objectives

Pure 1 (continued)

- Algebraic Methods
- Binomial expansion
- Trigonometric ratios
- Trigonometric identities and equations
- Vectors
- Differentiation

Statistics 1 (continued)

- Measures of location and spread
- Representing data

Year 12

End of Autumn

Spring 1 - Key Learning Objectives

Pure 1 (continued)

Differentiation
Integration
Exponentials and Logarithms

Statistics 1 (continued)

Representing data
Correlation

End of Spring

A-Level Maths Curriculum Roadmap - Year 12

Summer 1 - Key Learning Objectives

Mechanics 1 (continued)

- Forces and motion
- Variable acceleration

Statistics 1 (continued)

- Statistical distributions
- Hypothesis testing

Spring 2 - Key Learning Objectives

Mechanics 1 (continued)

Modelling in mechanics
Constant acceleration

Statistics 1 (continued)

Probability

End of Summer

Summer 2 - Key Learning Objectives

Statistics 1 (continued)
Hypothesis testing

Revision of Year 1 content and intro in Pure 2

A-Level Maths Curriculum Roadmap - Year 13

Year 13

Autumn 1 - Key Learning Objectives

Pure 2

- Algebraic methods
- Functions and graphs
- Sequences and series
- Binomial Expansion
- Radians
- Trigonometric Functions

End of Autumn

Autumn 2 - Key Learning Objectives

Pure 2 (continued)

- Trigonometry and modelling
- Parametric equations
- Differentiation
- Numerical methods
- Integration

Spring 1 - Key Learning Objectives

Statistics 2

- Regression, correlation and hypothesis testing
- Conditional probability
- The normal distribution

Mechanics 2

- Moments
- Forces and friction

End of Spring

Spring 2 - Key Learning Objectives

Mechanics 2

Projectiles
Applications of forces
Further kinematics

Pure 2 (continued)

Vectors

Summer 1 - Key Learning Objectives

Revision of Year 1 and Year 2 content - Exam practice

End of Summer

Summer 2 - Key Learning Objectives

Revision and Exam practice - Commencement of Summer Exams