



Year 10 Higher Scheme of Work

Parent Overview 2026-2027

This parent-friendly Scheme of Work provides an overview of the mathematics taught across Year 10 Higher. For each unit, it shows the building blocks students draw upon, the key learning objectives and the mathematical vocabulary they will meet.

Half Term	Curriculum Overview
Autumn 1	Unit 1: Rounding, Estimation and Bounds; Unit 2: Volume and Surface Area; Baseline Assessment; Unit 3: Algebraic Manipulation and Introducing Functions
Autumn 2	Assessment; Unit 4: Angles: Parallel Lines, Polygons and Circle Theorems 1; Unit 5: Indices; Unit 6: Sequences; Unit 7: Recurring Decimals; Assessment
Spring 1	Unit 8: Quadratic Equations and Graphs; Unit 9: Surds; Unit 10: Changing the Subject and Inverse Functions; Assessment
Spring 2	Unit 11: Careers Week: Plans and Elevations; Unit 12: Linear Graphs and Inequalities; Unit 13: Proportional Reasoning; Work Experience
Summer 1	Unit 14: Algebraic Proportion; Unit 15: Right-Angled Triangles in 2D and 3D; Unit 16: Solving Linear and Quadratic Simultaneous Equations; Unit 17: Transformations
Summer 2	Unit 18: Similarity; Unit 19: Composite Functions; Mock Exams; Unit 20: Growth and Decay; Mock DIRT and topic consolidation

What the sections mean

Building blocks: knowledge and skills used as a starting point for the unit. | Key objectives: the main mathematics students will learn. | Key words: important mathematical vocabulary used during the unit.

Unit 1: Rounding, Estimation and Bounds

Building blocks

- Round numbers to a given number of decimal places and to a given number of significant figures
- Estimate answers to one- or two-step calculations, including use of rounding numbers and formal estimation to 1 significant figure: mainly whole numbers and then decimals

Key objectives

- Truncate numbers to a given degree of accuracy
- Calculate the upper and lower bounds of numbers given to varying degrees of accuracy
- Use inequality notation to specify an error interval due to truncation or rounding
- Calculate the upper and lower bounds of an expression involving the four operations
- Find the upper and lower bounds in real-life situations using measurements given to appropriate degrees of accuracy
- Find the upper and lower bounds of calculations involving perimeters, areas and volumes of 2D and 3D shapes
- Calculate the upper and lower bounds of calculations, particularly when working with measurements

Key words

Round
Significant figure
Decimal Place
Estimate / Estimation
Truncate / Truncation
Upper Bound
Lower Bound
Inequality
Error interval
Approximate

Unit 2: Volume and Surface Area

Building blocks

- Sketch and interpret 3D solids and their planes of symmetry
- Use π accurately in calculations
- Recall areas of common 2D shapes and use nets
- Recall volume of cuboids, prisms and cylinders
- Find surface area of prisms and cylinders

Key objectives

- Calculate surface area of pyramids, spheres, cones and compound solids
- Calculate volumes of pyramids, spheres, cones, frustums and compound solids
- Give exact answers in terms of π or to an appropriate degree of accuracy
- Solve multi-step problems involving surface area and volume
- Form and solve equations involving dimensions of 3D shapes
- Estimate surface area and volume to check whether answers are reasonable

Key words

Volume
Surface Area
Shape
3D
2D
Cylinder
Sphere
Hemisphere
Cone
Pyramid
Compound
Degree of accuracy
Frustum

Unit 3: Algebraic Manipulation and Introducing Functions

Building blocks

- Use algebraic notation and symbols correctly
- Know the difference between a term, expression, equation, formula and an identity
- Write and manipulate an expression by collecting like terms
- Simplify expressions by cancelling
- Understand the $\neq$ symbol (not equal), e.g. $6x + 4 \neq 3(x + 2)$, and introduce identity $\equiv$ sign
- Multiply a single term over a bracket and recognise factors of algebraic terms involving single brackets and simplify expressions by factorising, including subsequently collecting like terms
- Factorise linear expressions
- Expand the product of two linear expressions, i.e. double brackets working up to negatives in both brackets and also similar to $(2x + 3y)(3x - y)$
- Understand and use $(x + a)^2 = (x + a)(x + a)$
- Expand the product of more than two linear expressions

Key objectives

- Factorisation and Use in Algebraic Fractions:
- Factorise quadratic expressions of the form $ax^2 + bx + c$, including cases where $a > 1$
- Solve quadratic equations by factorisation (including where $a > 1$) and sketch an appropriate graph
- Factorise quadratic expressions using the difference of two squares
- Simplify algebraic fractions by cancelling and by factorising
- Substitution and Function Notation:
- Use function notation and evaluate $f(x)$ for a given value of x
- Find $f(x) + g(x)$ and $f(x) - g(x)$, $2f(x)$, $f(3x)$ etc algebraically

Key words

Product
Expression
Quadratic
Term
Expand
Factorise

Substitute
Function
Evaluate

Unit 4: Angles: Parallel Lines, Polygons and Circle Theorems 1

Building blocks

- Recall angle facts around a point, on a straight line and in triangles and quadrilaterals
- Classify triangles, quadrilaterals and regular or irregular polygons
- Use properties of isosceles triangles
- Identify parts of a circle including radius, chord, tangent, arc, sector and segment

Key objectives

- Use corresponding, alternate, vertically opposite and co-interior angle facts, giving reasons
- Calculate interior and exterior angles of regular and irregular polygons
- Use polygon angle facts alongside algebra and ratio
- Apply circle theorems to find missing angles and give geometrical reasons
- Use radius properties and isosceles triangles within circle-theorem problems

Key words

Parallel
Corresponding
Alternate
Vertically Opposite
Co-interior
Transversal
Interior angle
Exterior angle
Polygon
Arc
Centre
Circumference
Subtend
Segment
Cyclic
Radius

Unit 5: Indices

Building blocks

- Use index notation for integer powers of 10, including negative powers; Recognise powers of 2, 3, 4, 5
- Use the square, cube and power keys on a calculator and estimate powers and roots of any given positive number, by considering the values it must lie between, e.g. the square root of 42 must be between 6 and 7; Use brackets and the hierarchy of operations up to and including with powers and roots inside the brackets, or raising brackets to powers or taking roots of brackets
- Use and calculate with standard form

Key objectives

- Find the value of calculations using indices including positive, fractional and negative indices
- Recall that $n^0 = 1$ and $n^{-1} = 1/n$ for positive integers
- Understand that the inverse operation of raising a positive number to a power n is raising the result of this operation to the power $1/n$
- Understand and use fractional indices
- Use index laws to simplify and calculate the value of numerical expressions involving multiplication and division of integer powers, fractional and negative powers, and powers of a power
- Solve problems using index laws
- Solve equations involving indices by changing the base, e.g. $16^x = 212$

Key words

Index / Indices
Root
Power
Base

Unit 6: Sequences

Building blocks

- Recognise simple sequences including at the most basic level odd, even, triangular, square and cube numbers (including those involving numbers in standard form or index form)
- Generate sequences of numbers, squared integers and sequences derived from diagrams
- Describe in words a term-to-term sequence and identify which terms cannot be in a sequence
- Generate specific terms in a sequence using the position-to-term rule and term-to-term rule
- Find and use (to generate terms) the n th term of an arithmetic sequence; Use the n th term of an arithmetic sequence to decide if a given number is a term in the sequence, or find the first term above or below a given number
- Identify which terms cannot be in a sequence by finding the n th term

Key objectives

- Continue a quadratic sequence and use the n th term to generate terms
- Find the n th term of quadratic sequences
- Distinguish between arithmetic and geometric sequences
- Use finite/infinite and ascending/descending to describe sequences; Recognise and use simple geometric progressions (ar^{n-1} where n is an integer, and r is a rational number > 0 or a surd)
- Continue geometric progression and find term to term rule, including negative, fraction and decimal terms
- Solve problems involving sequences from real life situations. Recognise and work with Fibonacci-type sequences

Key words

Sequence
Nth Term
Generate
Term
Quadratic
Second Difference
Geometric
Arithmetic
Finite
Infinite
Difference

Unit 7: Recurring Decimals

Building blocks

- Convert fractions into decimals
- Know when a fraction will terminate or recur
- Short division
- Use inverses to solve an equation

Key objectives

- Convert a fraction to a recurring decimal
- Convert a recurring decimal to a fraction

Key words

Fraction
Decimal
Terminating
Recurring
Prove

Unit 8: Quadratic Equations and Graphs

Building blocks

- Factorise quadratic expressions in the form $ax^2 + bx + c$
- Plot quadratic graphs

Key objectives

- Set up and solve quadratic equations
- Complete the square on a quadratic expression and use to solve a quadratic equation, including leaving answers in surd form
- Solve quadratic equations that need rearranging
- Solve quadratic equations by using the quadratic formula
- Identify roots, turning points and lines of symmetry of quadratic graphs; Use roots, turning points and lines of symmetry to sketch a quadratic graph

Key words

Quadratic
Coefficient
Factorise
Sketch
Parabola
Surd
Rearrange
Complete the square
Quadratic formula
Solution
Root
Minimum
Turning point
Line of Symmetry

Unit 9: Surds

Building blocks

- Use index notation for integer powers of 10, including negative powers; Recognise powers of 2, 3, 4, 5
- Use the square, cube and power keys on a calculator and estimate powers and roots of any given positive number, by considering the values it must
- lie between, e.g. the square root of 42 must be between 6 and 7
- Understand and use surd notation
- Simplify surd expressions by using square numbers

Key objectives

- Simplify a surd using square numbers
- Calculate with surds, including the four operations and the use of brackets
- Rationalise the denominator including
- 1
- $a+\sqrt{b}$

Key words

Surd
Rationalise
Denominator
Expand
Simplify
Irrational

Unit 10: Changing the Subject and Inverse Functions

Building blocks

- Solve linear equations
- Factorise linear expressions
- Rearranging equations and formulae
- Understand function notation

Key objectives

- Change the subject of a formula, including cases where the subject occurs on both sides of the formula, or where a power of the subject appears; Change the subject of a formula where all variables are in the denominators
- Know that $f^{-1}(x)$ refers to the inverse function
- Find the inverse of a linear function

Key words

Subject
Formula
Unknown
Term
Inverse
Denominator

Unit 11: Careers Week: Plans and Elevations

Building blocks

- Measure and draw lines, to the nearest mm
- Draw sketches of 3D solids
- Know the terms face, edge and vertex
- Identify and sketch planes of symmetry of 3D solids

Key objectives

- Understand and draw front and side elevations and plans of shapes made from simple solids
- Given the front and side elevations and the plan of a solid, draw a sketch of the 3D solid
- Careers Week activities centred around set design

Key words

Plan
Front elevation
Side elevation
Solid
3D
2D

Unit 12: Linear Graphs and Inequalities

Building blocks

- Plot coordinates and linear graphs
- Recognise gradient as a rate of change
- Use $y = mx + c$ and identify gradient and intercept
- Solve linear equations and interpret inequalities
- Work with equations of horizontal and vertical lines

Key objectives

- Find equations of straight lines from graphs, points and gradients
- Identify and use parallel and perpendicular gradients
- Find equations of lines perpendicular to a given line
- Solve linear inequalities and represent solutions on a number line
- Represent and solve inequalities in two variables graphically
- Use straight-line graphs to solve geometrical and contextual problems

Key words

Gradient
Intercept
Linear
Parallel
Perpendicular
Equation
Inequality
Region
Coordinate
Straight line

Unit 13: Proportional Reasoning

Building blocks

- Simple calculations involving speed and density
- Solve problems involving compound units of speed and density
- Solving 1 and 2-step equations
- Understand the concepts of direct and inverse proportion through contexts such as best buys currency conversion etc
- Scaling Ratios
- Writing ratio in the form $n:1$ or $1:n$
- Use equivalent fractions
- Solve equations involving fractions

Key objectives

- Solve problems involving speed, density or pressure
- Convert compound units
- Work with multiple compound measures to find an average speed or density of a compound
- Use the capture-recapture method to estimate the size of a population

Key words

Speed
Distance
Time
Density
Mass
Area
Pressure
Force
Volume
Capture-Recapture
Population

Unit 14: Algebraic Proportion

Building blocks

- Solving 1 and 2-step equations
- Understand the concepts of direct and inverse proportion through contexts such as best buys currency conversion etc

Key objectives

- Calculate an unknown quantity from quantities that vary in direct or inverse proportion
- Identify direct proportion from a table of values, by comparing ratios of values, for x^2 and x^3 relationships
- Identify inverse proportion from a table of values, by looking for a constant product
- Write statements of proportionality for quantities directly proportional to the square, cube or other power of another quantity
- Use $y = kx$ to solve direct proportion problems, including questions where
- students find k , and then use k to find another value
- Use $y = k/x$ to solve inverse proportion problems
- Identify direct proportion from a graph
- Recognise when values are in direct or inverse proportion by reference to the graph form, and use a graph to find the value of k in $y = kx$
- Relate algebraic solutions to graphical representation of the equations; Solve problems involving inverse proportion using graphs by plotting and reading values from graphs
- Set up and use equations to solve word and other problems involving direct or inverse proportion
- Solve problems involving inverse proportionality e.g. number of workers

Key words

Direct Proportion
Inverse Proportion
Constant of Proportionality

Unit 15: Right-Angled Triangles in 2D and 3D

Building blocks

- Understand, recall and use Pythagoras' Theorem in 2D
- Calculate the length of the hypotenuse in a right-angled triangle (including decimal lengths and a range of units)
- Find the length of a shorter side in a right-angled triangle
- Given three sides of a triangle, justify if it is right-angled or not
- Calculate the length of a line segment AB given pairs of points
- Give an answer to the use of Pythagoras' Theorem in surd form
- Understand, use and recall the trigonometric ratios sine, cosine and tan, and apply them to find angles and lengths in general triangles in 2D figures
- Use the trigonometric ratios to solve 2D problems
- Find angles of elevation and depression

Key objectives

- Recall and apply Pythagoras' Theorem
- Recall and apply trigonometric ratios to find missing lengths and angles; 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°
- Recognise trigonometric graphs and the link to exact values
- Deduce whether Pythagoras' Theorem or trigonometry is an appropriate method to solve a problem
- Understand, recall and use trigonometric relationships and Pythagoras' Theorem to solve problems in 3D configurations
- Calculate the length of a diagonal of a cuboid
- Find the angle between a line and a plane

Key words

Triangle
Right angle
Hypotenuse
Adjacent
3D
Pythagoras

Opposite
Sine, Cosine, Tangent
Elevation
Depression
Diagonal
2D

Unit 16: Solving Linear and Quadratic Simultaneous Equations

Building blocks

- Solve linear equations
- Rearrange formulae
- Substitute values into expressions, including algebraic
- Forming equations
- Solve quadratic equations
- Substitute values to complete a table of values
- Plot linear and quadratic graphs

Key objectives

- Find the exact solutions of two simultaneous equations in two unknowns
- Use elimination or substitution to solve simultaneous equations
- Solve exactly, by elimination of an unknown, two simultaneous equations in two unknowns: linear / linear, including where both need multiplying; linear / quadratic; linear / $x^2 + y^2 = r^2$
- Set up and solve a pair of simultaneous equations in two variables for each
- of the above scenarios, including to represent a situation
- Interpret the solution in the context of the problem
- Understand that a point of intersection of two graphs represents a solution of a pair of simultaneous equations
- Solve simultaneous equations graphically, including two linear equations, one linear and one quadratic function (line and circle graphically follows later)
- Solve simultaneous equations representing a real-life situation graphically, and interpret the solution in the context of the problem
- Rearrange an equation to identify an appropriate straight line to draw to find a solution

Key words

Simultaneous
Equation
Linear
Quadratic
Elimination
Substitution

Unknown
Solution
Variable
Interpret
Intersection
Point

Unit 17: Transformations

Building blocks

- Rotate and reflect 2D shapes
- Translate shapes using coordinates
- Enlarge shapes from a centre of enlargement
- Describe transformations using correct mathematical language
- Work confidently with coordinates in all four quadrants

Key objectives

- Translate shapes using column vectors and combine translations
- Rotate shapes about any centre and describe rotations fully
- Reflect shapes in horizontal, vertical and diagonal lines
- Enlarge shapes using positive, fractional and negative scale factors
- Find centres and scale factors of enlargement
- Identify invariant points and lines
- Describe and carry out combinations of transformations
- Use transformations to solve geometrical problems

Key words

Translate
Rotate
Reflection
Enlargement
Invariant points
Centre of enlargement
Centre of rotation
Column vector
Direction
Scale factor

Unit 18: Similarity

Building blocks

- Understand similarity of triangles and of other plane shapes, and use this to make geometric inferences
- Understand scale factors of enlargement
- Know that similar shapes have sides in the same proportion

Key objectives

- Prove that two shapes are similar by showing that all corresponding angles are equal in size and/or lengths of sides are in the same ratio/one is an enlargement of the other, giving the scale factor
- Use formal geometric proof for the similarity of two given triangles; Identify the scale factor of an enlargement of a similar shape as the ratio of the lengths of two corresponding sides
- Write the lengths, areas and volumes of two shapes as ratios in their simplest form
- Find missing lengths, areas and volumes in similar 3D solids
- Know the relationships between linear, area and volume scale factors of mathematically similar shapes and solids
- Use the relationship between enlargement and areas and volumes of simple shapes and solids
- Understand the effect of enlargement on angles, perimeter, area and volume of shapes and solids
- Solve problems involving frustums of cones where you have to find missing lengths first using similar triangles.

Key words

Similar
Linear
Scale factor
Frustum
Length
Cone
Area
Corresponding
Volume
Proportion
Enlargement
Squared
Cubed

Unit 19: Composite Functions

Building blocks

- Use function notation
- Find $f(x) + g(x)$ and $f(x) - g(x)$, $2f(x)$, $f(3x)$ etc algebraically
- Find the inverse of a linear function
- Know that $f^{-1}(x)$ refers to the inverse function

Key objectives

- For two functions $f(x)$ and $g(x)$, find $gf(x)$, both algebraically and where x is a given number
- For a function, $f(x)$, find $ff(x)$
- Solve problems involving composite functions e.g. $fg(x)=gf(x)$

Key words

Function
Composite
Substitute
Evaluate

Unit 20: Growth and Decay

Building blocks

- Express a given number as a percentage of another number
- Express one quantity as a percentage of another where the percentage is greater than 100%
- Find a percentage of a quantity
- Find the new amount after a percentage increase or decrease
- Work out a percentage increase or decrease, including: simple interest, income tax calculations, value of profit or loss, percentage profit or loss; Compare two quantities using percentages, including a range of calculations and contexts such as those involving time or money
- Find a percentage of a quantity using a multiplier and use a multiplier to increase or decrease by a percentage in any scenario where percentages are used
- Use percentages in real-life situations, including percentages greater than 100%
- Describe percentage increase/decrease with fractions, e.g. 150% increase means $2\frac{1}{2}$ times as big

Key objectives

- Find the original amount given the final amount after a percentage increase or decrease (reverse percentages), including VAT; Use calculators for reverse percentage calculations by doing an appropriate division
- Work out the multiplier for repeated proportional change as a single decimal number
- Represent repeated proportional change using a multiplier raised to a power, use this to solve problems involving compound interest and depreciation
- Use trial and improvement to find an unknown power in proportional change problems
- Set up, solve and interpret the answers in growth and decay problems

Key words

Percentage
Interest
Compound
Growth Decay
Depreciation
Multiplier