

Year 10 Higher Overview

The yearly overview provides suggested timings for each block of learning, which can be adapted to suit different term dates or other requirements.



	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Algebra Algebraic manipulation	Algebra Equations, inequalities and formulae	Algebra Quadratic expressions and equations				Number Percentages	Ratio, proportion and rates of change Ratio and scale		Number Work with fractions		
Spring	Number Non-calculator methods	Algebra Straight line graphs	Probability Probability		Number Rounding and estimation		Geometry and measures Perimeter, area and volume	Statistics Interpret and represent data		Algebra Non-linear graphs		
Summer	Geometry and measures Angles		Statistics Graphs and diagrams		Geometry and measures Vectors		Number Factors, powers and surds	Geometry and measures Pythagoras and trigonometry		Algebra Simultaneous equations		

Year 10 Higher Autumn Half Term 1



Block 1 – Week 1

Algebraic manipulation

- Substitute into expressions and formulae
- Simplify expressions
- Understand and use index laws
- Expand and factorise into single brackets

Block 2 – Weeks 2 and 3

Equations, inequalities and formulae

- Solve equations including with unknowns on both sides
- Understand and solve inequalities
- Represent inequalities on a number line
- Change the subject of a formula

Block 3 – Weeks 4, 5 and 6

Quadratic expressions and equations

- Expand double and triple brackets
- Factorise quadratic expressions
- Understand and use the difference of two squares
- Solve quadratic equations
- Complete the square
- Understand and use the quadratic formula

Notes/Links/Interleaving

- Revisit directed number and fraction arithmetic when solving equations and quadratic equations
- Solve equations in the context of earlier blocks e.g. ratio, probability etc.
- Reinforce links between quadratic equations and graphs
- Encourage comparisons between factorising, completing the square and quadratic formula methods to solve quadratic equations
- Encourage checking solutions through substitution and graphing

Extend steps

Equations, inequalities and formulae

- Represent solutions to inequalities using set notation
- Change the subject of a formula where the subject appears more than once

Quadratic expressions and equations

- Factorise more complex quadratic expressions
- Solve more complex quadratic equations by factorisation
- Complete the square with more complex quadratic expressions
- Solve quadratic equations by completing the square

Year 10 Higher Autumn Half Term 2



Block 4 – Weeks 7 and 8

Percentages

- Calculate percentage increase and decrease
- Find original amounts
- Express one number as a fraction or percentage of another
- Express a change as a percentage
- Understand and use simple and compound interest
- Solve problems with percentages

Block 5 – Weeks 9 and 10

Ratio and scale

- Understand and use equivalent ratios
- Share amounts in a ratio
- Link ratios and fractions
- Solve ratio problems
- Understand and use ratios and scales
- Combine ratios
- Solve algebraic ratio problems

Block 6 – Weeks 11 and 12

Work with fractions

- Four operations with fractions and mixed numbers
- Solve problems with fractions
- Understand and use algebraic fractions
- Four operations with algebraic fractions
- Simplify algebraic fractions

Notes/Links/Interleaving

- Revisit multipliers when working with percentages
- Solve problems involving financial maths and reinforce learning from KS3
- Allow students to use a calculator where appropriate and encourage estimation before calculator methods
- Revisit scale and measure conversion from KS3
- Reinforce fractions as operators
- Reinforce links between fractions, percentages and ratio
- Knowledge of percentages is required in various areas of science

Extend steps

Work with fractions

- Add and subtract more complex algebraic fractions
- Multiply and divide more complex algebraic fractions
- Solve equations with algebraic fractions

Year 10 Higher Spring Half Term 1



Block 1 – Week 1

Non-calculator methods

- Use the four operations with integers, decimals and directed numbers
- Apply the order of operations
- Work with related calculations
- Solve multi-step problems
- Convert recurring decimals to fractions

Block 2 – Weeks 2 and 3

Straight line graphs

- Draw and interpret straight line graphs
- Use graphs of the form $y = mx + c$
- Find the equation of a line
- Midpoint of a line segment
- Solve inequalities graphically
- Explore real-life straight line graphs

Block 3 – Weeks 4 and 5

Probability

- Calculate probabilities of combined events
- List and count outcomes
- Work with relative frequency
- Use and interpret tables and tree diagrams
- Understand independent and dependent events
- Apply the product rule

Block 4 – Week 6

Rounding and estimation

- Round numbers
- Estimate calculations
- Use calculators efficiently
- Use upper and lower bounds
- Interpret error intervals
- Choose appropriate accuracy
- Calculate bounds in calculations

Notes/Links/Interleaving

- Reinforce estimation to check answers
- Revisit directed number calculations
- Link straight line graphs to earlier coordinate work
- Reinforce algebraic fluency and solving equations when working with graphs
- Encourage interpretation of gradients and graphical solutions
- Reinforce theoretical and experimental probability
- Reinforce fraction arithmetic when calculating probability
- Encourage estimation and interpretation

Extend steps

Non-calculator methods

- Convert more complex recurring decimals to fractions

Straight line graphs

- Represent solutions to multiple inequalities on a graph
- Equations of perpendicular lines

Year 10 Higher Spring Half Term 2



Block 5 – Weeks 7 and 8

Perimeter, area and volume

- Calculate the perimeter and area of 2-D shapes
- Calculate the circumference and area of circles
- Calculate arc lengths and sector areas
- Calculate the volume and surface area of prisms and cylinders

Block 6 – Weeks 9 and 10

Interpret and represent data

- Calculate averages and the range
- Interpret ungrouped and grouped data
- Use data to compare distributions
- Explore types of data
- Use sampling methods
- Draw and interpret scatter graphs
- Understand and use capture and recapture
- Interpolation and extrapolation

Block 7 – Weeks 11 and 12

Non-linear graphs

- Draw quadratic, cubic and reciprocal graphs
- Estimate values from graphs
- Compare non-linear graphs
- Interpret roots, intercepts and turning points
- Estimate the gradient of a curve
- Use tangents and gradients
- Use equations of circles and tangents

Notes/Links/Interleaving

- Revisit metric unit conversions
- Connect probability and statistics through interpretation of data
- Reinforce equations e.g. solving problems about the mean
- Choose when to use mental, written or calculator methods
- Revisit graph skills and algebraic manipulation
- Encourage comparison of graphical representations and distributions
- Students draw and interpret scatter graphs in a variety of scientific contexts

Extend steps

Non-linear graphs

- Estimate the area under a curve
- Equation of a tangent to a circle

Year 10 Higher Summer Half Term 1



Block 1 – Weeks 1 and 2

Angles

- Use angle facts in lines and polygons
- Find interior and exterior angles
- Understand and use angles in parallel lines
- Solve problems with parallel lines
- Use geometric reasoning to solve problems

Block 2 – Weeks 3 and 4

Graphs and diagrams

- Draw and interpret statistical diagrams including pie charts, time series graphs, frequency polygons and stem-and-leaf diagrams
- Draw and interpret histograms
- Draw and interpret cumulative frequency diagrams
- Draw and interpret box plots
- Compare data from graphs and charts

Block 3 – Weeks 5 and 6

Vectors

- Understand and use vector notation
- Multiply vectors by scalars
- Add and subtract vectors
- Interpret vector movement and journeys in shapes
- Understand and use parallel vectors

Notes/Links/Interleaving

- Revisit angle facts and geometric reasoning from KS3 when solving problems involving polygons and parallel lines
- Choose when to use mental, written or calculator methods
- Connect statistical diagrams to prior work on probability and data interpretation
- Reinforce coordinate skills and transformations when introducing vectors
- Students will use a variety of graphs and diagrams to present scientific data

Extend steps

Angles

- Prove geometric facts

Graphs and diagrams

- Compare distributions using box plots

Year 10 Higher Summer Half Term 2



Block 4 – Weeks 7 and 8

Factors, powers and surds

- Understand and use prime factorisation, HCF and LCM
- Understand and use powers and roots
- Understand and use fractional and negative powers
- Four operations with surds
- Simplify and expand brackets with surds
- Rationalise denominators
- Solve problems with surds

Block 5 – Weeks 9 and 10

Pythagoras and trigonometry

- Use Pythagoras' theorem to find unknown lengths in 2-D and 3-D shapes
- Use trigonometric ratios to find unknown lengths and angles
- Use exact trigonometric values
- Apply trigonometry to 3-D shapes
- Use the sine and cosine rules
- Calculate the area of a non-right-angled triangle

Block 6 – Weeks 11 and 12

Simultaneous equations

- Solve simultaneous equations graphically
- Solve simultaneous equations algebraically
- Interpret solutions in context
- Solve problems with simultaneous equations

Notes/Links/Interleaving

- Build on learning from KS3 properties of number
- Reinforce algebraic manipulation and index laws alongside the factors, powers and surds block
- Connect trigonometry to earlier ratio and geometry work
- Use both graphical and algebraic approaches for simultaneous equations
- Encourage students to choose efficient solution methods
- Reinforce directed number calculations

Extend steps

Factors and powers

- Rationalise the denominator with more complex denominators

Simultaneous equations

- Solve simultaneous equations (one linear, one non-linear) using graphs
- Solve simultaneous equations (one linear, one non-linear) by equating expressions
- Solve simultaneous equations (one linear, one non-linear) using substitution