

Year 10 Foundation 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 Foundation Autumn Half Term 1



Block 1 – Weeks 1 and 2

Algebraic manipulation

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

Block 2 – Weeks 3 and 4

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 5 and 6

Quadratic expressions and equations

- Expand double brackets
- Factorise quadratic expressions
- Solve quadratic equations by factorising
- Draw quadratic graphs

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 checking solutions through substitution and graphing
- In science students may manipulate formulae to solve for variables, usually after substituting in given values

Extend steps

Equations, inequalities and formulae

- Change the subject of a complex formula

Quadratic expressions and equations

- Difference of two squares

Year 10 Foundation Autumn Half Term 2



Block 4 – Weeks 7 and 8

Percentages

- Calculate percentages of amounts
- 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 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

Block 6 – Weeks 11 and 12

Work with fractions

- Find fractions of amounts
- Increase or decrease an amount by a fraction
- Understand and use equivalent fractions and mixed numbers
- Add, subtract, multiply and divide fractions
- Solve problems with fractions

Notes/Links/Interleaving

- Revisit using 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

Percentages

- Repeated percentage change
- Compound interest

Ratio and scale

- Combine a set of ratios
- Share in a ratio (algebraically)

Year 10 Foundation Spring Half Term 1



Block 1 – Weeks 1 and 2

Non-calculator methods

- Understand place value for integers and decimals
- Compare and order numbers
- Use the four operations with integers, decimals and directed numbers
- Apply the order of operations
- Work with related calculations
- Solve multi-step problems

Block 2 – Weeks 3 and 4

Straight line graphs

- Draw and interpret straight line graphs
- Use graphs of the form $y = mx + c$
- Find and use gradients and intercepts
- Find the midpoint of a line segment
- Find the equation of a straight line given one point and the gradient

Block 3 – Weeks 5 and 6

Probability

- Calculate probabilities of single events
- Use the fact that probabilities sum to 1
- List outcomes
- Work with relative frequency
- Use and interpret sample spaces, two-way tables and frequency trees
- Understand independent events
- Use and interpret tree diagrams

Notes/Links/Interleaving

- Reinforce estimation to check answers
- 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

Extend steps

Straight line graphs

- Find the equation of a line from a graph
- Equation of a straight line graph given two points
- Real-life straight line graphs

Probability

- Tree diagrams for dependent events

Year 10 Foundation Spring Half Term 2



Block 4 – Week 7

Rounding and estimation

- Round integers and decimals
- Estimate calculations
- Use calculators efficiently
- Choose appropriate accuracy

Block 5 – Weeks 8 and 9

Perimeter, area and volume

- Name 2-D and 3-D shapes
- Calculate the perimeter and area of 2-D shapes
- Calculate the circumference and area of circles
- Calculate the volume and surface area of prisms
- Interpret nets of 3-D shapes

Block 6 – Weeks 10 and 11

Interpret and represent data

- Calculate averages and the range
- Interpret ungrouped and grouped data
- Explore types of data
- Use sampling methods
- Draw and interpret scatter graphs

Block 7 – Week 12

Non-linear graphs

- Use tables of values
- Draw quadratic and cubic graphs
- Estimate values from graphs
- Compare non-linear graphs

Notes/Links/Interleaving

- Encourage estimation and checking when using calculators
- Use real contexts to support understanding of accuracy
- 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
- Students draw and interpret scatter graphs in a variety of scientific contexts

Extend steps

Rounding and estimation

- Error intervals (including truncation)

Interpret and represent data

- Use data to compare distributions
- Interpolation and extrapolation

Non-linear graphs

- Intercepts and roots of quadratic graphs
- Approximate solutions to equations using graphs

Year 10 Foundation 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
- Use geometric reasoning to solve problems

Block 2 – Weeks 3 and 4

Graphs and diagrams

- Draw and interpret statistical diagrams including pictograms, bar charts and pie charts
- Draw and interpret frequency polygons
- Draw and interpret time series graphs
- Draw and interpret stem-and-leaf diagrams
- Compare data from graphs and charts

Block 3 – Weeks 5 and 6

Vectors

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

- Solve problems with angles in polygons
- Prove geometric facts

Vectors

- Solve problems with vectors

Year 10 Foundation Summer Half Term 2



Block 4 – Weeks 7 and 8

Factors, powers and surds

- Understand and use factor, multiples, primes, HCF and LCM
- Use prime factorisation
- Understand and use powers and roots
- Understand types of number including rational and irrational numbers

Block 5 – Weeks 9 and 10

Pythagoras and trigonometry

- Use Pythagoras' theorem to find unknown lengths in right-angled triangles
- Identify the hypotenuse, opposite and adjacent sides of a right-angled triangle
- Explore ratios in right-angled triangles
- Use trigonometric ratios to find unknown lengths and angles
- Solve problems with trigonometry

Block 6 – Weeks 11 and 12

Simultaneous equations

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

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, powers and surds

- Negative indices
- Simplify expressions with surds
- Expand brackets with surds

Pythagoras' theorem and trigonometry

- Exact trigonometric values

Simultaneous equations

- Solve simultaneous equations by substitution