Year 9 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	Number **Properties of number**		Number **Percentages**		Geometry and measures **Area and volume**		Algebra **Equations, inequalities and formulae**		Number **Fractions**	Ratio, proportion and rates of change **Rates**		Number **Standard form**
Spring	Number **Maths and money**			Algebra **Straight line graphs**		Ratio, proportion and rates of change **Ratio and proportion**		Geometry and measures **Constructions and congruence**		Geometry and measures **Similarity**	Algebra **Algebraic manipulation**	
Summer	Geometry and measures **Pythagoras' theorem**		Algebra **Non-linear graphs**		Probability **Sets and probability**		Geometry and measures **Transformations**		Algebra **Simultaneous equations** (optional block)		Geometry and measures **Trigonometry** (optional block)	

Year 9 Autumn Half Term 1

Block 1 – Weeks 1 and 2

Properties of number

- Understand and use factors, multiples, primes, HCF and LCM
- Draw and interpret Venn diagrams
- Use Venn diagrams to find the HCF and LCM
- Understand types of number

Block 2 – Weeks 3 and 4

Percentages

- Calculate percentage increase and decrease
- Find percentage changes
- Find the original value after a percentage change
- Calculate simple and compound interest
- Solve problems with percentages

Block 3 – Weeks 5 and 6

Area and volume

- Draw and interpret nets
- Find the area of 2-D shapes
- Find the circumference and area of a circle
- Calculate the surface area of cubes and cuboids
- Calculate the volume of prisms and cylinders

Notes/Links/Interleaving

- Build on learning from Year 7 properties of number
- Revisit proportional reasoning and FDP equivalence and revisit the use of multipliers from Year 8 when exploring percentages
- Allow students to use a calculator where appropriate and encourage estimation before calculator methods
- Link area and volume to earlier geometry and scale factor work
- Revisit metric unit conversions and rounding from Year 7
- Students calculate percentage increase or decrease in a variety of scientific contexts

Extend steps

Properties of number

- Use prime factors
- Introduction to surds

Area and volume

- Surface area of a triangular prism
- Surface area of a cylinder
- Volume of cones, pyramids and spheres
- Convert metric units of area and volume

Year 9 Autumn Half Term 2

Block 4 – Weeks 7 and 8

Equations, inequalities and formulae

- Solve equations and inequalities
- Substitute into formulae and equations
- Solve problems with equations and inequalities
- Change the subject of a formula

Block 5 – Week 9

Fractions

- Four operations with fractions and mixed numbers
- Calculate fractions of amounts
- Solve problems with fractions

Block 6 – Weeks 10 and 11

Rates

- Work with speed, distance and time
- Draw and interpret distance–time graphs
- Work with rates of change and their graphs

Block 7 – Week 12

Standard form

- Convert between numbers in ordinary and standard form
- Compare numbers in standard form
- Four operations with standard form

Notes/Links/Interleaving

- Reinforce algebraic manipulation when solving equations and changing the subject of a formula
- Solve equations in the context of earlier blocks e.g. area, angles, probability etc.
- Reinforce FDP equivalence
- Reinforce laws of indices to explain standard form calculations
- Choose when to use mental, written or calculator methods
- Students encounter many examples of rates of change and their units in science

Extend steps

Equations, inequalities and formulae

- Inequalities with negative numbers
- Change the subject of a complex formula

Rates

- Convert compound units

Year 9 Spring Half Term 1

Block 1 – Weeks 1, 2 and 3

Maths and money

- Use percentages in financial maths
- Interpret bills, payslips and tariffs
- Use exchange rates
- Solve budgeting problems
- Explore investments, borrowing and insurance

Block 2 – Weeks 4 and 5

Straight line graphs

- Draw and interpret straight line graphs
- Use and calculate gradients and intercepts
- Understand and use graphs of the form $y = mx + c$
- Find the equation of a straight line
- Interpret real-life graphs

Block 3 – Weeks 6 and 7

Ratio and proportion

- Solve ratio problems
- Work with direct proportion problems and graphs
- Interpret conversion graphs
- Work with inverse proportion

Notes/Links/Interleaving

- Use real-world financial examples to support proportional reasoning
- Revisit rounding to the nearest integer, decimal places and significant figures
- Allow students to use a calculator where appropriate and encourage estimation before calculator methods
- Link equations of graphs to solving equations
- Reinforce multiplicative thinking through ratio and proportion
- Revisit unit pricing when solving direct proportion problems

Extend steps

Straight line graphs

- Rearrange equations to the form $y = mx + c$
- Graph inequalities

Ratio and proportion

- Inverse proportion graphs
- Solve problems with ratio and algebra

Year 9 Spring Half Term 2

Block 4 – Weeks 8 and 9

Constructions and congruence

- Draw and measure angles
- Accurately draw triangles and polygons
- Construct angle bisectors and perpendicular bisectors
- Identify congruent triangles
- Use congruence conditions

Block 5 – Week 10

Similarity

- Identify similar shapes
- Use scale factors
- Calculate lengths in similar shapes

Block 6 – Weeks 11 and 12

Algebraic manipulation

- Expand and factorise into single brackets
- Understand and use identities
- Expand double brackets
- Factorise quadratic expressions
- Solve quadratic equations by factorising

Notes/Links/Interleaving

- Encourage precise mathematical communication in accurate drawings and constructions
- Revisit scale factors and proportional reasoning in congruence and similarity
- Reinforce proportional reasoning in geometry
- Revisit the use of directed number

Extend steps

Similarity

- Solve problems with similar triangles
- Ratio in right-angled triangles

Algebraic manipulation

- Solve quadratic equations
- Expand triple brackets

Year 9 Summer Half Term 1

Block 1 – Weeks 1 and 2

Pythagoras' theorem

- Identify the hypotenuse of a right-angled triangle
- Determine whether a triangle is right-angled
- Use Pythagoras' theorem to find unknown lengths in right-angled triangles
- Use Pythagoras' theorem on coordinate axes

Block 2 – Weeks 3 and 4

Non-linear graphs

- Substitute into quadratic expressions
  Draw and interpret quadratic graphs
- Draw and interpret reciprocal and exponential graphs
- Link graphs and equations

Block 3 – Weeks 5 and 6

Sets and probability

- Understand and use set notation
- Calculate probabilities of single and combined events
- Find probabilities using table and Venn diagrams
- Work with relative frequency
- Explore expected outcomes
- Understand independent events

Notes/Links/Interleaving

- Build on earlier graph work when introducing quadratic and exponential graphs
- Encourage comparison between graphical and algebraic methods
- Revisit probability representations including Venn diagrams, two-way tables and sample spaces
- Reinforce FDP equivalence and fraction arithmetic when working with probability
- Allow students to use a calculator where appropriate

Extend steps

Pythagoras' theorem

- Proofs of Pythagoras' theorem
- Pythagoras' theorem in 3-D shapes

Non-linear graphs

- Draw cubic graphs
- Interpret cubic graphs
- Interpret roots, intercepts and turning points

Sets and probability

- Complement of a set

Year 9 Summer Half Term 2

Block 4 – Weeks 7 and 8

Transformations
- Reflect, rotate, translate and enlarge shapes
- Describe transformations
- Combine transformations

Block 5 – Weeks 9 and 10

Simultaneous equations (optional block)
- Solve simultaneous equations graphically
- Solve simultaneous equations algebraically
- Interpret solutions in context

Block 6 – Weeks 11 and 12

Trigonometry (optional block)
- Identify the hypotenuse, opposite and adjacent sides in a right-angled triangle
- Understand and use sine, cosine and tangent ratios
- Find unknown lengths and angles in right-angled triangles

Notes/Links/Interleaving

- Revisit coordinates, scale factors and similarity in transformation work
- Use multiple representations for simultaneous equations
- Revisit the use of directed number
- Connect trigonometry to earlier ratio and geometry understanding

Extend steps

Transformations
- Enlargement (negative scale factor)
- Find the result of a series of transformations

Simultaneous equations
- Solve simultaneous equations (adjust both)
- Solve simultaneous equations by substitution

Trigonometry
- Key angles in right-angled triangles
- Trigonometry in 3-D shapes