

YEAR 9

Key information

Low Stakes Assessment

Each topic outlined below will be assessed via an Exit Ticket at the end of the unit of learning. This will be teacher marked and whole class feedback will be provided.

Summative Assessment

Students will sit two assessments across the year that cumulatively assess learning from the year. Students will be provided with a revision list in advance and are expected to revise independently for these assessments.

ILS

- Students in Y9 are expected to complete a 40-minute task on Sparx Maths each week. This is comprised of practice questions and flashcards. The tasks are set on a two-week lag behind taught curriculum content. Support videos are available within Sparx for reference if students are stuck, as well as worked examples on students' knowledge organisers.
- Key vocabulary should be practiced using flashcards or self-quizzing from the unit knowledge organiser.

Wider Reading

- Students can look in more depth at each unit of learning via the Sparx Maths Independent Learning function. This has videos and practice questions for self-study.
- Students can use revision guides for wider reading on a topic.
- Students can use BBC Bitesize for wider reading on a topic.

SMSC

Students spiritual, moral, social and cultural development is fostered in maths through discussion activities in which different perspectives on a problem are discussed. Students are exposed to the work of a vast array of mathematicians through the curriculum and explicit cultural links to art, architecture and language are made where appropriate.



Autumn Term

A4a. Understanding Graphs

Composites

- Gradient of a Line Segment
- Gradient of a Line
- Understanding $y = mx + c$
- Parallel Lines
- Features of a Quadratic

Key Vocabulary

Gradient	The steepness of a line.
Parallel	Two straight lines that never intersect and are always the same distance apart (the same gradient).
Quadratic	A U-shaped graph with an equation of the form $y = ax^2 + bx + c$.
y-intercept	The point at which the line crosses the y-axis.

How to help at home

- [Gradient of a Line Video \(Corbett Maths\)](#)
- [y = mx + c Video \(Corbett Maths\)](#)

Careers Links

Skills relating to understanding graphs are essential in careers such as engineering, architecture, surveying, construction, computer programming, physics and data science. Professionals use these concepts to design structures, model real-life situations, analyse patterns, predict outcomes and solve complex problems accurately.

A4b. Mathematical Relationships 3

Composites

- Solving with Unknowns Both Sides
- Forming and Solving
- Changing the Subject
- Rearranging into the Form $y = mx + c$

Key Vocabulary

Solve	To find a numerical value that satisfies a mathematical relationship (makes it true).
Subject	The isolated variable.
Variable	A letter that represents an unknown number or a changeable quantity.

How to help at home

- Refer to the 'Algebra Tiles' video on the [Alder Maths Department](#) page
- [Solving with Unknowns Both Sides Video \(Corbett Maths\)](#)
- [Changing the Subject Video \(Corbett Maths\)](#)

Careers Links

In this unit, students develop algebraic reasoning, problem-solving and mathematical modelling skills that are essential in careers such as engineering, architecture, science, computer programming, economics and finance. Professionals use these skills to manipulate formulas, model



	real-life situations, calculate unknown values and make accurate predictions and decisions.										
A4c. Testing Conjectures											
Composites • True or False Statements • Always, Sometimes, or Never True Statements • Show that Statements • Conjectures about Number • Conjectures with Algebra	Key Vocabulary <table> <tr> <td>Conjecture</td><td>A mathematical statement that has not been rigorously proven.</td></tr> <tr> <td>Counterexample</td><td>An example that disproves a statement</td></tr> </table>	Conjecture	A mathematical statement that has not been rigorously proven.	Counterexample	An example that disproves a statement						
Conjecture	A mathematical statement that has not been rigorously proven.										
Counterexample	An example that disproves a statement										
How to help at home Testing Conjectures Video (YouTube)	Careers Links Testing conjectures develops logical reasoning, critical thinking and analytical skills that are essential in careers such as mathematics, engineering, computer programming, scientific research, law and data science. Professionals test hypotheses, evaluate evidence, identify patterns and justify conclusions to solve problems, improve systems and make informed decisions.										
G3a. 3D Shapes											
Composites • Recognising Prisms and Nets • Plans and elevations • Surface Area of Prisms • Surface Area of Cylinders • Volumes of Prisms and Cylinders	Key Vocabulary <table> <tr> <td>Cylinder</td><td>A 3D shape with a circular cross-section.</td></tr> <tr> <td>Net</td><td>A 2D arrangement of polygons that can be folded into a 3D shape.</td></tr> <tr> <td>Prism</td><td>A 3D shape with a constant cross-section and straight edges.</td></tr> <tr> <td>Surface Area</td><td>The sum of the areas of the faces of a 3D shape.</td></tr> <tr> <td>Volume</td><td>The amount of space inside a 3D shape (the capacity of a container).</td></tr> </table>	Cylinder	A 3D shape with a circular cross-section.	Net	A 2D arrangement of polygons that can be folded into a 3D shape.	Prism	A 3D shape with a constant cross-section and straight edges.	Surface Area	The sum of the areas of the faces of a 3D shape.	Volume	The amount of space inside a 3D shape (the capacity of a container).
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Volume	The amount of space inside a 3D shape (the capacity of a container).										
How to help at home	Careers Links										



• Nets Video (Corbett Maths) • Plans and Elevations Video (Corbett Maths) • Surface Area Video (Corbett Maths) • Volume Video (Corbett Maths)	This unit develops skills in spatial reasoning, visualisation, measurement and problem-solving that are essential in careers such as architecture, engineering, construction, manufacturing, product design and surveying. Professionals use these skills to interpret technical drawings, design three-dimensional objects, calculate material requirements and ensure structures and products are accurate, efficient and safe.								
G3b. Constructions									
Composites • Locus from a point • Locus from a straight line • Perpendicular bisectors • Locus of distance from 2 lines • Angle bisectors • Constructing triangles	Key Vocabulary <table><tr><td>Bisector</td><td>A line that divides something into two equal parts.</td></tr><tr><td>Construct</td><td>Create an accurate drawing using a pencil, ruler, compass and/or protractor.</td></tr><tr><td>Locus</td><td>A set of points with a common property (plural: loci).</td></tr><tr><td>Perpendicular</td><td>Two straight lines that intersect at a right angle (at 90°).</td></tr></table>	Bisector	A line that divides something into two equal parts.	Construct	Create an accurate drawing using a pencil, ruler, compass and/or protractor.	Locus	A set of points with a common property (plural: loci).	Perpendicular	Two straight lines that intersect at a right angle (at 90°).
Bisector	A line that divides something into two equal parts.								
Construct	Create an accurate drawing using a pencil, ruler, compass and/or protractor.								
Locus	A set of points with a common property (plural: loci).								
Perpendicular	Two straight lines that intersect at a right angle (at 90°).								
How to help at home • Constructing Loci Video (Corbett Maths) • Bisectors Video (Corbett Maths) • Constructing Triangles (Corbett Maths)	Careers Links This unit develops spatial reasoning, geometric accuracy and problem-solving skills that are essential in careers such as architecture, engineering, surveying, construction, urban planning and computer-aided design (CAD). Professionals use these skills to produce accurate technical drawings, determine precise locations, design structures and ensure projects meet exact specifications and safety standards.								

Spring Term

N8a. Solving Number Problems



Composites - HCF and LCM (Venn Diagrams) - Solving Problems with HCF and LCM - Solving Problems with Fractions - Solving Problems with Decimals	Key Vocabulary HCF Highest common factor - the biggest factor that two or more numbers/terms share. LCM Lowest common multiple - the smallest multiple that two or more numbers/terms share.
How to help at home HCF/LCM Video (Corbett Maths)	Careers Links This unit develops numerical reasoning, problem-solving and proportional thinking skills that are essential in careers such as engineering, finance, accounting, science, logistics and computer programming. Professionals use these skills to manage quantities, optimise processes, calculate costs and measurements, and solve real-world numerical problems accurately and efficiently.
N8b. Using Percentages	
Composites - Using Multipliers - Solving Problems with Multipliers - Solving Reverse Percentage Problems - Expressing Values as Percentages - Calculating Percentage Change	Key Vocabulary Loss Money lost after expenditure and taxes. Multiplier A value to multiply by. Profit Money made after expenditure and taxes. VAT Value added tax - tax added onto products (usually 20%).
How to help at home Percentage Multipliers Video (Corbett Maths) Reverse Percentages Video (Corbett Maths) Expressing Values as Percentages Video (Corbett Maths) Percentage Change Video (Corbett Maths)	Careers Links This unit develops skills that are essential in careers such as finance, accounting, business, retail, economics and data analysis. Professionals use these skills to calculate tax, analyse growth and discounts, compare values, manage budgets and make accurate financial and commercial decisions.
N8c. Maths and Money	
Composites	Key Vocabulary



• Simple Interest • Exchange Rates • Best Value • Wages, Salaries and Bank Statements	Interest The cost of borrowed money or money paid for saving. Percent Out of 100.												
How to help at home • Share examples of your wage slips or bank statements with students, discuss deductions such as taxes, NI to give context to students' studies • If aboard on holiday, compare currency used to GBP and use a rounded exchange rate to estimate cost • When shopping, compare different sized packets of items and look for the information on labels comparing price per set quantity to give context to best value • Simple Interest Video (Corbett Maths)	Careers Links This unit covers skills that are essential in careers such as banking, finance, accounting, business, retail and economics. Professionals use these skills to manage money, compare costs, calculate earnings, convert currencies and interpret financial information to make informed personal and commercial decisions.												
G4a. Angles in Parallel Lines													
Composites • Angles in Parallel Lines • Alternate and Corresponding Angles • Co-interior angles in parallel lines • Solving Angle Problems • Conjectures about Geometry	Key Vocabulary <table> <tr> <td>Alternate Angles</td><td>A pair of equal angles on opposite sides of a transversal through parallel lines.</td></tr> <tr> <td>Co-Interior Angles</td><td>A pair of angles that sum to 180° on the same side of a transversal through parallel lines.</td></tr> <tr> <td>Conjecture</td><td>A mathematical statement that has not been rigorously proven.</td></tr> <tr> <td>Corresponding Angles</td><td>A pair of equal angles on the same side of a transversal through parallel lines.</td></tr> <tr> <td>Parallel</td><td>Two straight lines that never intersect and are always the same distance apart (the same gradient).</td></tr> <tr> <td>Transversal</td><td>A straight line that intersects two or more other (normally parallel) lines.</td></tr> </table>	Alternate Angles	A pair of equal angles on opposite sides of a transversal through parallel lines.	Co-Interior Angles	A pair of angles that sum to 180° on the same side of a transversal through parallel lines.	Conjecture	A mathematical statement that has not been rigorously proven.	Corresponding Angles	A pair of equal angles on the same side of a transversal through parallel lines.	Parallel	Two straight lines that never intersect and are always the same distance apart (the same gradient).	Transversal	A straight line that intersects two or more other (normally parallel) lines.
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Parallel	Two straight lines that never intersect and are always the same distance apart (the same gradient).												
Transversal	A straight line that intersects two or more other (normally parallel) lines.												



How to help at home • Angles in Parallel Lines Video (Corbett Maths)	Careers Links This unit develops geometric reasoning, logical thinking and problem-solving skills that are essential in careers such as engineering, architecture, surveying, construction, design and computer-aided design (CAD). Professionals use these skills to interpret and create accurate drawings, calculate unknown angles, design structures and ensure precision and safety in real-world applications.								
G4b. Rotation & Translation									
Composites • Types of Symmetry • Rotating Shapes • Describing Rotations • Column Vectors • Translating Shapes	Key Vocabulary <table><tr><td>Rotation</td><td>A transformation that turns an object in a given direction.</td></tr><tr><td>Symmetry</td><td>One shape is identical to another shape when it is moved, rotated or flipped.</td></tr><tr><td>Translation</td><td>A transformation moving an object in a vector with an x and y component.</td></tr><tr><td>Vector</td><td>A quantity with both magnitude and direction.</td></tr></table>	Rotation	A transformation that turns an object in a given direction.	Symmetry	One shape is identical to another shape when it is moved, rotated or flipped.	Translation	A transformation moving an object in a vector with an x and y component.	Vector	A quantity with both magnitude and direction.
Rotation	A transformation that turns an object in a given direction.								
Symmetry	One shape is identical to another shape when it is moved, rotated or flipped.								
Translation	A transformation moving an object in a vector with an x and y component.								
Vector	A quantity with both magnitude and direction.								
How to help at home • Rotations Video (Corbett Maths) • Translations Video (Corbett Maths)	Careers Links This unit develops skills that are essential in careers such as architecture, engineering, graphic design, robotics, computer programming and game design. Professionals use these skills to describe and manipulate movement, design structures and graphics, model transformations and solve real-world problems involving position and direction.								
G4c. Pythagoras' Theorem									
Composites • Pythagoras' Theorem • Applying Pythagoras' Theorem • Pythagoras on Axes • Pythagoras in 2D Shapes	Key Vocabulary <table><tr><td>Hypotenuse</td><td>The longest side on a right-angled triangle. It is always opposite the right angle.</td></tr></table>	Hypotenuse	The longest side on a right-angled triangle. It is always opposite the right angle.						
Hypotenuse	The longest side on a right-angled triangle. It is always opposite the right angle.								



How to help at home • Pythagoras' Theorem Video (Corbett Maths) • Pythagoras on Axes Video (Corbett Maths)	Careers Links Study of Pythagoras' Theorem develops spatial reasoning, algebraic thinking and problem-solving skills that are essential in careers such as engineering, architecture, surveying, construction, physics and computer science. Professionals use these skills to calculate distances, design structures, analyse spatial relationships and solve real-world measurement problems accurately.
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Summer Term							
R2a. Enlargements							
Composites • Positive, negative and fractional enlargements on a grid • Describing enlargements	Key Vocabulary <table><tr><td>Enlargement</td><td>Changing the size of a shape.</td></tr><tr><td>Scale Factor</td><td>A multiplier describing a change in size</td></tr><tr><td>Similar</td><td>Shapes of different sizes that have corresponding sides in equal proportion and identical corresponding angles.</td></tr></table>	Enlargement	Changing the size of a shape.	Scale Factor	A multiplier describing a change in size	Similar	Shapes of different sizes that have corresponding sides in equal proportion and identical corresponding angles.
Enlargement	Changing the size of a shape.						
Scale Factor	A multiplier describing a change in size						
Similar	Shapes of different sizes that have corresponding sides in equal proportion and identical corresponding angles.						
How to help at home • Enlargements Video (Corbett Maths) • Describing Enlargements Video (Corbett Maths)	Careers Links Study of enlargements develops spatial reasoning, geometric understanding and proportional thinking skills that are essential in careers such as architecture, engineering, graphic design, computer graphics, animation and game design. Professionals use these skills to scale designs accurately, model changes in size, create visual representations and produce precise technical and digital artwork.						
R2b. Proportion							
Composites	Key Vocabulary <table><tr><td>Asymptote</td><td>A straight line that a graph will never meet.</td></tr></table>	Asymptote	A straight line that a graph will never meet.				
Asymptote	A straight line that a graph will never meet.						



- Understanding direct and inverse proportion relationships and examples in real-life contexts - Graphs of direct and inverse proportion	<table> <tr> <td>Direct Proportion</td><td>Two variables that change at the same rate.</td></tr> <tr> <td>Inverse Proportion</td><td>As one variable is multiplied by a scale factor the other is divided by the same scale factor.</td></tr> <tr> <td>Linear</td><td>Has a constant additive difference.</td></tr> <tr> <td>Proportion</td><td>A relationship that describes how two things change in relation to each other.</td></tr> </table>	Direct Proportion	Two variables that change at the same rate.	Inverse Proportion	As one variable is multiplied by a scale factor the other is divided by the same scale factor.	Linear	Has a constant additive difference.	Proportion	A relationship that describes how two things change in relation to each other.
Direct Proportion	Two variables that change at the same rate.								
Inverse Proportion	As one variable is multiplied by a scale factor the other is divided by the same scale factor.								
Linear	Has a constant additive difference.								
Proportion	A relationship that describes how two things change in relation to each other.								
How to help at home - Refer to the 'Ratio Tables' video on the Alder Maths Department page - When using a recipe at home, involve students in working out quantities of ingredients needed if scaling a recipe up or down Proportion (Unitary Method) Video (Corbett Maths) Proportion (Recipes) Video (Corbett Maths)	Careers Links This unit develops proportional reasoning, algebraic thinking and data interpretation skills that are essential in careers such as engineering, physics, economics, finance, data science and healthcare. Professionals use these skills to model relationships between variables, analyse trends, make predictions and solve real-world problems involving changing quantities.								
R2c. Rates									
Composites - Converting units of time (understanding that our number system is base 100 whereas hours are base 60) - Speed, Distance, Time - Density, Mass, Volume - Pressure, Force and Area - Compound Units Problems	Key Vocabulary <table> <tr> <td>Density</td><td>A property measuring how tightly packed particles of a substance are.</td></tr> <tr> <td>Pressure</td><td>The amount of force applied perpendicularly to a given area.</td></tr> <tr> <td>Speed</td><td>The rate at which an object covers distance.</td></tr> </table>	Density	A property measuring how tightly packed particles of a substance are.	Pressure	The amount of force applied perpendicularly to a given area.	Speed	The rate at which an object covers distance.		
Density	A property measuring how tightly packed particles of a substance are.								
Pressure	The amount of force applied perpendicularly to a given area.								
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How to help at home - Refer to the 'Ratio Tables' video on the Alder Maths Department page Speed, Distance, Time Video (Corbett Maths) Density, Mass, Volume Video (Corbett Maths) Pressure, Force, Area Video (Corbett Maths)	Careers Links This unit develops proportional, numerical and problem-solving skills that are essential in careers such as engineering, physics, healthcare, construction, aviation, logistics and environmental science. Professionals use these skills to measure and convert quantities accurately, calculate rates and efficiencies, design and test systems and solve real-world problems involving multiple linked variables								



P4. Probability 3

Composites - Theoretical vs. Experimental Probability - Relative Frequency - Understanding Independent Events - Probability Trees - Solving Probability Problems	Key Vocabulary <table> <tr> <td>Independent Events</td><td>An event that is not affected by any other events.</td></tr> <tr> <td>Probability</td><td>The likelihood of an event happening.</td></tr> <tr> <td>Relative Frequency</td><td>How often something occurs divided by the total number of outcomes.</td></tr> </table>	Independent Events	An event that is not affected by any other events.	Probability	The likelihood of an event happening.	Relative Frequency	How often something occurs divided by the total number of outcomes.
Independent Events	An event that is not affected by any other events.						
Probability	The likelihood of an event happening.						
Relative Frequency	How often something occurs divided by the total number of outcomes.						
How to help at home Relative Frequency Video (Corbett Maths) Probability Trees Video (Corbett Maths)	Careers Links This unit develops statistical reasoning, analytical thinking and problem-solving skills that are essential in careers such as data science, actuarial science, finance, engineering, medicine and computer science. Professionals use these skills to model uncertainty, analyse risk, interpret data and make informed predictions and decisions in real-world contexts.						

A5. Inequalities

Composite - Understanding Inequalities - Inequalities on a Number Line - Solving Inequalities - Solving Inequalities with Negatives - Error Intervals	Key Vocabulary <table> <tr> <td>Bound</td><td>The maximum or minimum value that a number could have been before it was rounded.</td></tr> <tr> <td>Error Interval</td><td>The range of possible original values a number or measurement could have been before it was rounded or truncated.</td></tr> <tr> <td>Inequalities</td><td>Mathematical relationships that compare two expressions showing if one is greater than, less than or equal to another.</td></tr> </table>	Bound	The maximum or minimum value that a number could have been before it was rounded.	Error Interval	The range of possible original values a number or measurement could have been before it was rounded or truncated.	Inequalities	Mathematical relationships that compare two expressions showing if one is greater than, less than or equal to another.
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Inequalities	Mathematical relationships that compare two expressions showing if one is greater than, less than or equal to another.						
How to help at home - Refer to the 'Algebra Tiles' video on the Alder Maths Department page Inequalities on Number Lines Video (Corbett Maths) Solving Inequalities Video (Corbett Maths)	Careers Links Study of inequalities develops algebraic reasoning, logical thinking and problem-solving skills that are essential in careers such as engineering, science, economics, computer science, manufacturing and healthcare. Professionals use these skills to define constraints, model real-world						



- [Error Intervals Video \(Corbett Maths\)](#)

limitations, analyse tolerances and ensure accuracy and safety in calculations and designs

N9. Standard Index Form 2

Composites

- Multiplying and Dividing Standard Form
- Powers of Standard Form
- Solving Standard Form Problems

Key Vocabulary

Base	The number being repeatedly multiplied.
Power	A base with an exponent/index. Sometimes used as a synonym for exponent/index.
Standard Form	A system of writing very big or very small numbers using a power of ten.

How to help at home

- Refer to the 'Place-Value Charts' video on the [Alder Maths Department](#) page
- [Multiplying Standard Form Video \(Corbett Maths\)](#)
- [Dividing Standard Form Video \(Corbett Maths\)](#)

Careers Links

Studying standard form develops numerical fluency, estimation skills and problem-solving abilities that are essential in careers such as engineering, physics, astronomy, computer science, data science and finance. Professionals use these skills to handle very large and very small numbers, simplify calculations, interpret scientific data and solve real-world problems efficiently and accurately.