

YEAR 8

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 Y8 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

R1a. Ratio

Composites

- Understanding ratios
- Equivalent ratios
- Sharing into a ratio

Key Vocabulary

Ratio A multiplicative relationship describing how two numbers or variables compare.

How to help at home

- Refer to the 'Ratio Tables' video on the [Alder Maths Department](#) page
- [Sharing into a Ratio Video \(Corbett Maths\)](#)

Careers Links

Understanding ratios is essential in careers such as engineering, construction, cooking, finance and science. Professionals use ratio reasoning to scale quantities, mix materials, compare relationships and divide resources accurately in real-world situations.

R1b. Multiplicative Change

Composites

- Conversion (and other real-life) graphs
- Similar shapes
- Scale diagrams
- Interpreting maps (and scales)

Key Vocabulary

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

- Refer to the 'Ratio Tables' video on the [Alder Maths Department](#) page
- Use a paper map with a scale to plan a walk and involve students in working out the total distance of the route planned using the scale

Careers Links

Understanding multiplicative change is important in careers such as engineering, architecture, surveying, geography, transport planning and design. Professionals use these skills to interpret data, create accurate models, work with scale factors and represent real-world situations visually and precisely.

N6. Multiplicative Operations with Fractions

Composites

Key Vocabulary



• Multiplying and dividing fractions, mixed fractions and decimals	Reciprocal A pair of numbers with a product of 1 (a multiplicative inverse).
How to help at home • Multiplying Fractions Video (Corbett Maths) • Dividing Fractions Video (Corbett Maths)	Careers Links Multiplicative operations with fractions are important in careers such as engineering, construction, baking, science and finance. Professionals use these skills to scale quantities, calculate proportions and work accurately with measurements and ratios in practical, real-world situations.
A2. Plotting Graphs	
Composites • Plotting linear graphs • Plotting curved graphs • Describing and noticing features of graphs	Key Vocabulary Linear Has a constant additive difference. Plot To use exact coordinates to produce a graph. Quadrant One quarter of the coordinate plane.
How to help at home • Plotting Coordinates Video (Corbett Maths) • Drawing Graphs Video (Corbett Maths)	Careers Links Plotting graphs is an important skill in careers such as science, engineering, economics, data analysis and geography. Professionals use graphs to represent and interpret data, identify patterns and trends, and communicate information clearly to support decision-making and problem-solving.
P2a. Representing Data 1	
Composites • Understanding types of data • Constructing and interpreting scatter graphs • Ungrouped frequency tables • Two-way tables	Key Vocabulary Correlation The type of relationship between two variables. Extrapolation Using a line of best fit to estimate outside the range of data. Interpolation Using a line of best fit to estimate within the range of data. Outlier A value that stands apart from the data set.



How to help at home • Scatter Graphs Video (Corbett Maths) • Correlation Video (Corbett Maths) • Two-Way Tables Video (Corbett Maths)	Careers Links Understanding how to work with data is essential in careers such as data science, economics, healthcare, marketing and environmental science. Professionals use these skills to organise information, identify relationships and trends, and make evidence-based decisions				
P2b. Probability 2					
Composites • Understanding combinations • Finding probabilities from frequency diagrams • Sample space diagrams (for two events)	Key Vocabulary <table><tr><td>Probability</td><td>The likelihood of an event happening.</td></tr><tr><td>Product</td><td>The result of a multiplication.</td></tr></table>	Probability	The likelihood of an event happening.	Product	The result of a multiplication.
Probability	The likelihood of an event happening.				
Product	The result of a multiplication.				
How to help at home • Probability Video (Corbett Maths) • Sample Space Diagrams Video (Corbett Maths)	Careers Links Understanding probability is important in careers such as statistics, data science, finance, insurance, gaming design and scientific research. Professionals use these skills to analyse possible outcomes, assess risk and uncertainty, and make informed predictions and decisions based on data.				

Spring Term					
A3a. Mathematical Relationships 2					
Composites • Expanding single and double brackets • Factorising into single brackets • Forming and solving equations with brackets and fractions	Key Vocabulary <table><tr><td>Expand</td><td>To multiply each term in the bracket by the coefficient.</td></tr><tr><td>Factorise</td><td>To put an expression into brackets by dividing by the highest common factor (the opposite of expanding).</td></tr></table>	Expand	To multiply each term in the bracket by the coefficient.	Factorise	To put an expression into brackets by dividing by the highest common factor (the opposite of expanding).
Expand	To multiply each term in the bracket by the coefficient.				
Factorise	To put an expression into brackets by dividing by the highest common factor (the opposite of expanding).				



	Variable A letter than 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 Expanding Double Brackets Video (Corbett Maths)	Careers Links Skills in manipulating algebraic expressions and solving equations are essential in careers such as engineering, architecture, computer science, finance and data analysis. Professionals use these skills to model real-world situations, simplify complex problems and calculate unknown values accurately when designing systems, analysing data and making predictions.
A3b. Sequences 2	
Composites - Using worded and algebraic rules to generate sequences - Finding and using the nth term for a linear sequence	Key Vocabulary nth term A position to term rule for a sequence. Sequence An ordered set of numbers, shapes or objects, arranged according to a rule.
How to help at home Nth Term Video (Corbett Maths)	Careers Links Algebraic skills relating to sequences are important in careers such as computer programming, engineering, finance, data analysis and actuarial science. Professionals use these skills to model patterns, predict future values, analyse trends and solve problems involving systematic change.
A3c. Indices	
Composites - Understanding the laws of indices - Simplifying multiplicative expressions	Key Vocabulary Base The number being repeatedly multiplied. Exponent The number of repeats in the multiplication (synonym of index/indices). Power A base with an exponent/index. Sometimes used as a synonym for exponent/index.
How to help at home Laws of Indices Video (Corbett Maths)	Careers Links



• Simplifying Multiplicative Expressions Video (Corbett Maths)	Skills in using the laws of indices are essential in careers such as engineering, computer science, physics, finance and data analysis. Professionals use these rules to simplify and manipulate large or complex calculations, model exponential growth and decay, and solve problems efficiently in scientific and real-world contexts.
N7a. Percentage Skills	
Composites • Converting Fluently Between FDP (Recap from Y7) • Percentage Increase and Decrease (Ratio Table) • Expressing Values as Percentages • Calculating Percentage Change • Solving Percentage Problems	Key Vocabulary Percent Out of 100.
How to help at home • Refer to the 'Ratio Tables' video on the Alder Maths Department page • Expressing as a Percentage Video (Corbett Maths) • Percentage Change Video (Corbett Maths)	Careers Links Percentage skills are essential in careers such as finance, retail, banking, economics, healthcare and business. Professionals use these skills to analyse data, calculate growth and change, manage budgets, interpret statistics and make informed financial decisions.
N7b. Standard Index Form 1	
Composites • Converting to and from standard form • Ordering numbers written in standard form • Adding and subtracting numbers in standard form	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 Chart' video on the Alder Maths Department page • Standard Form Video (Corbett Maths)	Careers Links Skills in using standard form are essential in careers such as science, engineering, astronomy, computer science and finance. Professionals use standard form to efficiently represent and calculate with very large or very



Adding Standard Form Video (Corbett Maths)	small numbers, enabling accurate communication, modelling and analysis in scientific and real-world contexts.
N7c. Averages	
Composites - Calculating mean, median and mode - Comparing averages and the appropriate use of each for different data sets	Key Vocabulary Mean A type of average - the sum of the data divide by the number of items. Median A type of average - the middle piece of data in an ordered list. Mode A type of average - the most frequent piece of a data in a set. Range The difference between the greatest and least numbers in a set (a measure of spread).
How to help at home Mean Video (Corbett Maths) Median Video (Corbett Maths) Mode Video (Corbett Maths)	Careers Links Skills in calculating and interpreting the mean, median and mode are essential in careers such as data analysis, healthcare, education, economics and sports science. Professionals use these measures of central tendency to summarise data sets, identify trends and make informed decisions based on statistical information.

Summer Term	
G2a. Angles in Shapes	
Composites - Solve angle problems (recap from Y7) - Properties of special quadrilaterals (trapezium, parallelogram, rhombus) - Calculating interior and exterior angles of polygons	Key Vocabulary Exterior Angle An angle created by extending the side of a polygon. Interior Angle An angle inside a shape. Polygon A 2D closed shape made with straight lines.
How to help at home Angles in Quadrilaterals Video (Corbett Maths)	Careers Links



• Angles in Polygons Video (Corbett Maths)	Understanding angles in shapes is fundamental in careers such as engineering, architecture, construction, surveying and design. Professionals use these geometric principles to create accurate plans, ensure structural stability and solve spatial problems in real-world contexts.										
G2b. Area and Perimeter											
Composites • Calculating area and perimeter of rectangles, triangles and trapezia • Calculating area and perimeter of compound shapes • Calculating area and circumference of circles	Key Vocabulary <table> <tr> <td>Area</td><td>The space inside a 2D shape.</td></tr> <tr> <td>Circumference</td><td>The perimeter of a circle.</td></tr> <tr> <td>Compound Shape</td><td>A shape that is made up of two or more geometric shapes.</td></tr> <tr> <td>Diameter</td><td>A line segment connecting two points on the circumference of a circle passing through the centre.</td></tr> <tr> <td>Radius</td><td>A line segment connecting the centre to the circumference of a circle.</td></tr> </table>	Area	The space inside a 2D shape.	Circumference	The perimeter of a circle.	Compound Shape	A shape that is made up of two or more geometric shapes.	Diameter	A line segment connecting two points on the circumference of a circle passing through the centre.	Radius	A line segment connecting the centre to the circumference of a circle.
Area	The space inside a 2D shape.										
Circumference	The perimeter of a circle.										
Compound Shape	A shape that is made up of two or more geometric shapes.										
Diameter	A line segment connecting two points on the circumference of a circle passing through the centre.										
Radius	A line segment connecting the centre to the circumference of a circle.										
How to help at home • Area of a Circle Video (Corbett Maths) • Area of Compound Shapes Video (Corbett Maths) • Perimeter Video (Corbett Maths) • Circumference Video (Corbett Maths)	Careers Links Skills in calculating area and perimeter are essential in careers such as architecture, construction, engineering, landscaping and design. Professionals use these calculations to plan spaces, estimate materials, manage costs and ensure accuracy when working with real-world measurements.										
G2c. Symmetry & reflection											
Composites • Establishing line symmetry • Reflecting an object in a straight line	Key Vocabulary <table> <tr> <td>Invariant</td><td>A point that does not move after a transformation.</td></tr> <tr> <td>Reflection</td><td>A transformation mapping an object from one position to another of equal distance from a given line.</td></tr> <tr> <td>Symmetry</td><td>One shape is identical to another shape when it is moved, rotated or flipped.</td></tr> </table>	Invariant	A point that does not move after a transformation.	Reflection	A transformation mapping an object from one position to another of equal distance from a given line.	Symmetry	One shape is identical to another shape when it is moved, rotated or flipped.				
Invariant	A point that does not move after a transformation.										
Reflection	A transformation mapping an object from one position to another of equal distance from a given line.										
Symmetry	One shape is identical to another shape when it is moved, rotated or flipped.										



How to help at home • Line Symmetry Video (Corbett Maths) • Reflections Video (Corbett Maths)	Careers Links Understanding symmetry and reflections is important in careers such as architecture, engineering, graphic design, computer animation and art. Professionals use these skills to create accurate designs and models, transform shapes, and solve spatial problems where balance and precision are required.
P3a. Representing Data 2	
Composites • Interpreting and constructing: - Pictograms - Dual bar charts - Pie Charts • Exploring graphs in the media and recognising misleading features/headlines	Key Vocabulary Proportion A relationship that describes how two things change in relation to each other.
How to help at home • Pictograms Video (Corbett Maths) • Dual Bar Charts Video (Corbett Maths) • Drawing Pie Charts Video (Corbett Maths) • Interpreting Pie Charts Video (Corbett Maths)	Careers Links Representing and critically analysing representations of data are essential in careers such as data analysis, journalism, marketing, public health and economics. Professionals use these skills to present information clearly, identify trends, and critically assess whether data is accurate, reliable and misleading.
P3b. Using Averages	
Composites • Finding the mean from charts and ungrouped/grouped frequency tables • Exploring the impact of outliers on the mean, median and mode • Comparing distributions using averages	Key Vocabulary Frequency The number of times a particular data value occurs. Mean A type of average - the sum of the data divide by the number of items. Outlier A value that stands apart from the data set.
How to help at home	Careers Links



- [Finding the Mean from a Table Video \(Corbett Maths\)](#)
- [Estimating the Mean Video \(Corbett Maths\)](#)

Competence in using averages is essential in careers such as data science, healthcare, economics, education and sports analysis. Professionals use these skills to summarise and compare data sets, identify patterns and anomalies, and make informed, evidence-based decisions.