

### Curriculum Overview

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 7	Numeracy Negative numbers Order of operations Types of number	Probability Introduction to algebra	Averages Calculating with decimals Area and perimeter	Fractions Percentages	Area and Perimeter Ratio Measuring angles	Stem and leaf scatter graphs Transformations
Year 8	Volume Surface area	Pie charts Two-way tables Forming expressions Indices laws	Substitution Solving equations Polygons Converting fractions, decimals and percentages	Percentages Probability Types of number	Area and circumference of circles Fractions	Pythagoras theorem Coordinates Scatter diagrams Transformations
Year 9	Simplifying Expanding brackets Inequalities HCF and LCM Estimating	Constructions Sequences Straight line graphs Curved graphs	Number	Algebra	Graphs Tables Charts	Ratio Fractions Percentages
Year 10 Foundation	Number Algebra basics Tables Charts Graphs	Fractions Percentages Equations Inequalities Sequences	Angles Averages and range	Perimeter and area Volume Graphs	Transformations Ratio Right-angles triangles	Probability Multiplicative reasoning Construction Loci
Year 10 Higher	Surds Standard form	Fractions Ratio	Graphs Area and volume	Equations Inequalities	Multiplicative reasoning	Further statistics Graphs

	Algebra Representing data	Percentages Angles Trigonometry	Transformations Constructions	Probability	Similarity Congruence More trigonometry	
Year 11 Foundation	Probability Multiplicative reasoning Construction	Perimeter and area Volume Graphs	Fractions Indices Standard form Congruence and similarity Vectors	Rearranging equations Graphs	Revision	
Year 11 Higher	Probability Multiplicative reasoning Similarity Congruence	More trigonometry Further statistics	Equations Graphs Circle theorems More algebra	Revision	Revision	
Year 12	Pure - Algebraic Expression Pure - Quadratics Pure - Equations and Inequalities Pure - Straight Line Graphs Mechanics - Modelling	Pure Graphs and Transformations. Pure Circles Pure Algebraic Methods  Mechanics Constant Acceleration	Pure Binomial Expansion Stats - Data Collection Stats - Measures and Location of Spread Stats - Representations of Data Mechanics Constant Acceleration	Pure Trigonometric ratios Stats Correlation Stats - Probability Stats - Statistical Distribution Mechanics Forces and Motion	Pure Trigonometric Identities and Equations Stats - Statistical Distribution Stats Hypothesis Testing Mechanics - Variable Acceleration	Pure Revision Stats Hypothesis Testing Mechanics Revision

Year 13	Pure - Algebraic Methods Pure Functions and Graphs Pure Sequences and Series Pure Radians	Pure -Trigonometric Functions Pure Trigonometry and Modelling Pure Binomial Expansion Pure - Differentiation	Pure - Parametric Equations Pure - Differentiation Stats regression, Correlation and Hypothesis testing Mechanics Moments Mechanics Forces and Friction	Pure - Numerical Methods Stats Conditional Probability Mechanics Projectiles	Pure Integration Pure Vectors Stats Normal Distribution Mechanics Applications of Forces Mechanics Further Kinematics	Pure Integration Stats Normal Distribution and Revision Mechanics Further Kinematics and revision
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## Homework Focus

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 7	Number	Number Sequences	Algebra	Shape Averages	Fractions	Ratio Angles
Year 8	Angles Data	Shape Number	Algebra	Polygons FDP	Percentages HCF/LCM	Fractions Circles
Year 9	Pythagoras Volume	Algebra	Number	Sequences Graphs	Data	Algebra
Year 10	Ratio Percentages	Number	Equations Inequalities	Averages	Shape	Ratio Algebra
Year 11	Statistics Probability	Shape	Algebra	Number	Revision	

### Enrichment Opportunities

	Year 7	Year 8	Year 9	Year 10	Year 11
Suggested Reading	50 mathematical ideas you really need to know - Tony Crilly	How many socks make a pair - Rob Eastaway	Alex's adventures in numberland - Alex Bellos	How to cut a cake: and other mathematical conundrums - Ian Stewart	The imagination game - Jim Ottoviani
Suggested Viewing		Gifted	Da Vinci Code	A Beautiful Mind	The Man Who Knew Infinity
Suggested Experiences	LEGOLAND trip looking at the science of roller coasters	Count on us challenge club	Count on us challenge club	STEM club  Thorpe park trip looking at the science of roller coasters	



### Links to the KS3 National Curriculum

Working mathematically through the mathematics content, pupils should be taught to:

<b>The National Curriculum</b>	<b>Welling School reference to the National Curriculum</b>
<b>Develop fluency</b>	<b>All Topics in all years</b>
Consolidate their numerical and mathematical capability from key stage 2 and extend their understanding of the number system and place value to include decimals, fractions, powers and roots	All years (number)
Select and use appropriate calculation strategies to solve increasingly complex problems	All Years
Use algebra to generalise the structure of arithmetic, including to formulate mathematical relationships	All Years (algebra)
Substitute values in expressions, rearrange and simplify expressions, and solve equations	Algebra (substitution)
Move freely between different numerical, algebraic, graphical and diagrammatic representations [for example, equivalent fractions, fractions and decimals, and equations and graphs]	All years (algebra and Graphs)
Develop algebraic and graphical fluency, including understanding linear and simple quadratic functions	All years (Graphs)
Use language and properties precisely to analyse numbers, algebraic expressions, 2-D and 3-D shapes, probability and statistics.	All years (Graphs and Shapes)



<b>The National Curriculum</b>	<b>Welling School reference to the National Curriculum</b>
<b>Reason mathematically</b>	<b>All topics in all years</b>
Extend their understanding of the number system; make connections between number relationships, and their algebraic and graphical representations	Number
Extend and formalise their knowledge of ratio and proportion in working with measures and geometry, and in formulating proportional relations algebraically	Ratio and Proportion & Shapes
Identify variables and express relations between variables algebraically and graphically	Algebra modules - all years
Make and test conjectures about patterns and relationships; look for proofs or counter- examples	Tessellations
Begin to reason deductively in geometry, number and algebra, including using geometrical constructions	Constructions
Interpret when the structure of a numerical problem requires additive, multiplicative or proportional reasoning	algebra
Explore what can and cannot be inferred in statistical and probabilistic settings, and begin to express their arguments formally.	Probability and Averages

<b>The National Curriculum</b>	<b>Welling School reference to the National Curriculum</b>
<b>Solve problems</b>	<b>All topics in all years</b>
Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems	Number and solving equations with unknowns on both sides
Develop their use of formal mathematical knowledge to interpret and solve problems, including in financial mathematics	Fractions, decimals and Percentage
Begin to model situations mathematically and express the results using a range of formal mathematical representations	Problem solving
Select appropriate concepts, methods and techniques to apply to unfamiliar and non- routine problems.	Problem solving



Links to the Exam Specification

Edexcel Exam Specification	Welling Reference to the Edexcel Exam Specification
GCSE Foundation and Higher Specification Edexcel <a href="https://www.pearson.com/qualifications/edexcel/gcse-and-gce-2014">Edexcel GCSE and GCE 2014 (pearson.com)</a>	KS4 (Year 10 and 11)
A Level Maths Edexcel <a href="https://www.pearson.com/qualifications/edexcel/as-and-a-level-mathematics-2017">Pearson Edexcel AS and A level Mathematics (2017)   Pearson qualifications</a>	KS5 (Year 12 and 13)