

# Mathematics

**Working hard together, achieving together, making every lesson count**

The Mathematics Team will provide students with exciting, relevant and challenging Mathematics, delivered by dedicated staff. Students will understand the underlying principles of the mathematics they learn, making links and developing reasoning skills and logical thinking. They will progress towards being independent mathematicians who take ownership of their learning and can identify correct and incorrect work for themselves. Students will have their confidence encouraged and their complacency challenged in order to maximise potential.

To achieve this, staff will design and develop simple and effective systems and interesting and effective teaching ideas and resources to enable classroom delivery and promote mathematics across the school.



Autumn		Spring		Summer	
Algebra	Graphs and Charts		Time and Timetables		
Place Value	Sequences	Fractions and %	Negative Numbers	Averages	Types of Number
Calculating with decimals	Properties of 2D shapes (including Area and Perimeter)	Angles	Algebra	Probability	

Students will receive one piece of homework per week that will be marked and returned to the student at the next available opportunity. The piece of work will be designed to last between 1 hour and 1½. Unless otherwise stated by the teacher, students should complete homework in their book and show all working out. Homework could take a variety of formats including:

- Worksheet
- Research Project
- MathsWatch
- Revision
- Exam Practice



Unit	Duration (weeks)	Learning Objectives/Outcomes
Algebra 1	3	<ul style="list-style-type: none"> <li>• BIDMAS - order of operations</li> <li>• Substitution into expressions and formulae</li> <li>• Forming Expressions &amp; Equations</li> <li>• Simplifying expressions by collecting like terms</li> <li>• Simplifying expressions by using index notation</li> <li>• Expanding brackets</li> <li>• Solving Equations</li> <li>• Code breaking with Enigma</li> </ul>
Place Value and Rounding	1	<ul style="list-style-type: none"> <li>• Place value, numbers in words, rounding to the nearest 10, 100, 1000 (incl. in context)</li> <li>• Multiply and divide by powers of 10</li> <li>• Place value with decimals, ordering numbers incl. decimals</li> <li>• Rounding to decimal places</li> <li>• Rounding to significant figures</li> </ul>
Calculations with Decimals	1	<ul style="list-style-type: none"> <li>• Addition and subtraction of whole numbers and decimals. (vocabulary: sum, difference)</li> <li>• Problems in context (money, etc.)</li> <li>• Multiplication and Division of decimals</li> <li>• Dealing with money (use different currencies)</li> </ul>
Graphs and Charts	3	<ul style="list-style-type: none"> <li>• Recognise different types of data - Quant, Qual, Disc, Continuous etc.</li> <li>• Classification of data - Run-around game</li> <li>• Plan/construct a database - Car park survey</li> <li>• Construct and analyse pictorial representations of data, including Pie Charts</li> <li>• Design a questionnaire and criticise poor questions</li> <li>• Interpreting scatter graphs and line of best fit</li> <li>• Co-ordinates (4 quadrants), Using co-ordinates</li> </ul>
Sequences	1	<ul style="list-style-type: none"> <li>• Calculating missing terms</li> <li>• Nth term of linear sequences</li> <li>• Generating sequences using nth term</li> <li>• Sequences involving patterns</li> <li>• Nth term of sequences with fractional terms</li> </ul>

Properties of 2-D shapes (including Area and Perimeter)	3	<ul style="list-style-type: none"> <li>• Find and estimate area by counting squares</li> <li>• Be able to calculate areas of rectangles, triangles, parallelograms and trapezium.</li> <li>• Be able to find missing lengths when given areas of shapes.</li> <li>• Be able to investigate areas and draw conclusions (rich task lesson)</li> <li>• Be able to calculate circumference of circles</li> <li>• Be able to calculate area of circles</li> <li>• Be able to calculate compound areas involving circles</li> <li>• Functional compound area problems.</li> <li>• Unit conversions</li> </ul>
Fractions, Decimals and Percentages	4	<ul style="list-style-type: none"> <li>• Percentages to fractions then decimals</li> <li>• Converting between FDP</li> <li>• Ordering basic FDP</li> <li>• Simple % of amounts calculations</li> <li>• Fractions of quantities</li> <li>• Fractions of amounts</li> <li>• Ordering fractions</li> <li>• Mixed numbers to improper fractions and vice versa</li> <li>• Adding and subtracting fractions</li> <li>• Multiplying and Dividing Fractions</li> </ul>
Angles	2	<ul style="list-style-type: none"> <li>• Measuring Angles</li> <li>• Constructing Angles</li> <li>• Calculating missing angles (straight line/triangle, on a point)</li> <li>• Classifying angles</li> <li>• Angles in Quadrilaterals</li> <li>• Angle in special Triangles</li> <li>• Vertically opposite angles</li> <li>• Scale Drawings</li> <li>• Plans and elevations</li> </ul>
Time and Timetables	1	<ul style="list-style-type: none"> <li>• Time - Convert between 12/24 notation</li> <li>• Difference between analogue and digital time</li> <li>• Manipulating time calculations</li> <li>• Reading timetables</li> <li>• Planning a journey</li> </ul>
Negative Numbers	1	<ul style="list-style-type: none"> <li>• Ordering negative numbers,</li> <li>• Negative numbers in context</li> <li>• Calculations with negative numbers</li> </ul>

Algebra 2 (with Negatives)	2	<ul style="list-style-type: none"> <li>• Substitution into expressions and formulae</li> <li>• Forming Expressions and Equations</li> <li>• Simplifying expressions by collecting like terms</li> <li>• Simplifying expressions by using index notation</li> <li>• Expanding brackets</li> <li>• Solving Equations</li> </ul>
Averages	2	<ul style="list-style-type: none"> <li>• Averages and Measures of Spread- Calculate MMR</li> <li>• Choose an appropriate average</li> <li>• Compare averages and measures of spread</li> <li>• Frequency Tables and MMR</li> </ul>
Probability	2	<ul style="list-style-type: none"> <li>• Use of words on a probability scale (likely, unlikely, even chance, certain, impossible)</li> <li>• Calculating probability for independent events</li> <li>• Probability space diagrams (two dice problem, coin and dice, etc.)</li> <li>• Listing outcomes (e.g. food menu)</li> <li>• Fraction decimal percentage equivalence</li> <li>• Relative Frequency (higher ability)</li> <li>• Estimations from probability (higher ability)</li> <li>• Intro to probability tree diagrams (higher ability)</li> <li>• Independent and dependent events - what is the difference (higher ability)</li> </ul>
Types of Number	1	<ul style="list-style-type: none"> <li>• Recognise square numbers up to 15 x 15</li> <li>• Understands Multiples and Factors</li> <li>• Write down factor pairs</li> </ul>

