

## Year 7 Mathematics

Recognise the importance, power and beauty of maths.  
 Secure a sound understanding of number and number operations, able to recall key facts and calculate accurately and fluently with understanding.  
 Develop deep conceptual understanding of all areas of the curriculum with repeated practise to build key knowledge and skills.  
 Solve problems by exploring, questioning and trialling, making links to other areas of maths.  
 Reason mathematically by exploring, justifying, convincing and making generalisations.  
 Acknowledge that maths is essential to everyday life; future study, financial literacy, employment.

### Methods of deepening and securing knowledge:

<b>Retrieval</b>	Starter activities and independent study recap prior learning from Key Stage 2 and earlier units in Year 7.
<b>Modelling</b>	Key techniques are modelled clearly with worked examples and explanations of both procedure and principles.
<b>Learning journey and yearly overview</b>	Each unit of work has a learning journey which includes a glossary of key vocabulary. The success criteria allow students to keep track of their own progress and next steps. There are also support and challenge activities for independent study.
<b>Support and challenge</b>	Work is clearly differentiated at bronze, silver, gold and platinum level. Students are aware of their TEG and what progress looks like for them. Students are encouraged to push themselves further where appropriate. Challenge activities require students to think, explain, justify and convince to deepen their understanding.
<b>Questioning</b>	Teachers give students thinking time when posing questions. Questioning is used to develop thinking/reasoning skills as well as identify misconceptions. Variety of retrieval techniques used including cold calling.
<b>Maths club</b>	A lunchtime maths club is available for any student who would like additional support from a teacher.

	Autumn term 1	Autumn term 2	Spring term 1
Topic(s)	<p><b>Who are we project</b></p> <ul style="list-style-type: none"> <li>● Getting to know each other.</li> <li>● What makes a mathematician?</li> <li>● Maths at Northallerton.</li> <li>● Our expectations.</li> </ul> <p><b>Numbers and the number system</b></p> <ul style="list-style-type: none"> <li>● Solve problems using common factors and highest common factors.</li> <li>● Exploring prime numbers.</li> <li>● Solve problems using common multiples and lowest common multiples.</li> <li>● Explore powers and roots.</li> </ul> <p><b>Checking, approximating and estimating</b></p> <ul style="list-style-type: none"> <li>● Explore ways of approximating numbers.</li> <li>● Explore ways of checking answers.</li> </ul>	<p><b>Calculating</b></p> <ul style="list-style-type: none"> <li>● Exploring place value.</li> <li>● Exploring written methods of calculation.</li> <li>● Calculating with decimals.</li> <li>● Know and apply the correct order of operations.</li> </ul> <p><b>Visualising and constructing</b></p> <ul style="list-style-type: none"> <li>● Interpret geometrical conventions and notation.</li> <li>● Apply geometrical conventions and notation.</li> </ul>	<p><b>Investigating properties of shapes</b></p> <ul style="list-style-type: none"> <li>● Investigate the properties of 3D shapes.</li> <li>● Explore quadrilaterals.</li> <li>● Explore triangles.</li> </ul> <p><b>Algebraic proficiency: tinkering</b></p> <ul style="list-style-type: none"> <li>● Understand the vocabulary and notation of algebra.</li> <li>● Manipulate algebraic expressions.</li> <li>● Explore functions.</li> <li>● Evaluate algebraic statements.</li> </ul> <p><b>Proportional reasoning</b></p> <ul style="list-style-type: none"> <li>● Understand and use ratio notation.</li> <li>● Solve problems that involve dividing in a ratio.</li> </ul>
Assessment	Thirteen low stakes BAM tests at the end of key units throughout the year. Each assessment takes approximately half an hour and allows students to build up a picture of their next steps. Workshop lessons are designed to allow students to correct any mistakes and work on their next steps.		
CEIAG ( <i>Careers that are linked to that topic</i> )	Real life uses of HCF/LCM in a variety of jobs eg delivery schedules.	Accurate drawing and labelling of shapes - skills needed for tradespeople.	Recipes and scaling for catering.

	Spring term 2	Summer term 1	Summer term 2
Topic(s)	<p><b>Exploring fractions, decimals and percentages</b></p> <ul style="list-style-type: none"> <li>Understand and use top-heavy fractions.</li> <li>Understand the meaning of 'percentage'.</li> <li>Explore links between fractions and percentages.</li> </ul> <p><b>Measuring space</b></p> <ul style="list-style-type: none"> <li>Measure accurately.</li> <li>Convert between measures.</li> <li>Solve problems involving measurement.</li> </ul> <p><b>Solving equations and inequalities</b></p> <ul style="list-style-type: none"> <li>Explore ways of solving equations.</li> <li>Solve two-step equations.</li> <li>Solve three-step equations.</li> </ul>	<p><b>Calculating fractions, decimals and percentages</b></p> <ul style="list-style-type: none"> <li>Calculate with fractions.</li> <li>Calculate with percentages.</li> </ul>	<p><b>Calculating space</b></p> <ul style="list-style-type: none"> <li>Develop knowledge of area.</li> <li>Investigate surface area.</li> <li>Explore volume.</li> </ul> <p><b>Mathematical movement</b></p> <ul style="list-style-type: none"> <li>Explore lines on the coordinate grid.</li> <li>Use transformations to move shapes.</li> <li>Describe transformations.</li> </ul> <p><b>Presentation of data</b></p> <ul style="list-style-type: none"> <li>Explore types of data.</li> <li>Construct and interpret graphs.</li> <li>Select appropriate graphs and charts.</li> </ul> <p><b>Measuring data</b></p> <ul style="list-style-type: none"> <li>Investigate averages.</li> <li>Explore ways of summarising data.</li> <li>Analyse and compare sets of data.</li> </ul>
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CEIAG ( <i>Careers that are linked to that topic</i> )	Standard form used in science to describe magnitude.	Compound measures for speed - journey times.	

### Independent Study

Independent study is set weekly throughout term time. The work is differentiated with BSGP difficulty levels. All students are expected to spend a minimum of half an hour on the work and complete at least six questions. The work covers four different areas of learning with increasing difficulty.