

**Sir John Cass Red Coat School Programme of Study – Key Stage 4**  
**Subject: Mathematics**

**\*Students embark on GCSE Mathematics from year 9**

Year 9	Year 10	Year 11
<p><b><u>Topics Covered/ Areas of Focus:</u></b></p> <ul style="list-style-type: none"> <li>• Number</li> <li>• Algebra</li> <li>• Graphs, tables and charts</li> <li>• Fractions and percentages</li> <li>• Equations, inequalities and sequences</li> <li>• Angles and Trigonometry.</li> </ul>	<p><b><u>Topics Covered/ Areas of Focus:</u></b></p> <p>Through the GCSE Mathematics content pupils will be able to:</p> <ul style="list-style-type: none"> <li>• Develop Fluency – by ensuring understanding of the number system to include powers roots and indices.</li> <li>• Reason Mathematically – for example interpret when the structure of a numerical problem requires additive, multiplicative or proportional reasoning.</li> <li>• Develop skills on number, algebra, shape, space, measure and data handling.</li> </ul>	<p><b><u>Topics Covered/ Areas of Focus:</u></b></p> <p>This specification will help students to develop their:</p> <ul style="list-style-type: none"> <li>• higher order knowledge and understanding of mathematical principles</li> </ul> <p>experience of advanced Mathematics, such as Calculus skills in Trigonometry, functions and graphs further</p> <ul style="list-style-type: none"> <li>• ability to select, apply and link mathematical techniques and methods to solve challenging and non-routine problems</li> <li>• independent mathematical reasoning and argument.</li> </ul>
<p><b><u>Skills Development &amp; Expected Progress:</u></b></p> <p>Mathematics has many applications in many walks of life including business, science, construction, design and statistics. It has enabled us to organise, communicate and manipulate information in efficient way, and gives us the chance to explain and predict things in real life. The mathematics department at Sir John Cass, therefore, strives hard to help pupils learn how to solve problems which require the use of mathematical knowledge and techniques.</p>	<p><b><u>Skills Development &amp; Expected Progress:</u></b></p> <p>They will be expected to strengthen ability in several areas of Mathematics including: basic numeracy (including fractions, percentages and ratios) and computational skills, estimation, effective use of calculator, measurement, geometry (both two and three-dimensional), proofs, statistics, probability, algebra and graphical representation.</p>	<p><b><u>Skills Development &amp; Expected Progress:</u></b></p> <p>During the course of year 11 the emphasis gradually shifts away from the learning of new mathematical techniques and towards the application of techniques to the solution of unfamiliar problems. As well as obtaining answers, pupils will be expected to be able to describe accurately and concisely their methods of solution, orally as well as on paper. Pupils are also expected to be efficient in their usage of non-calculator methods to problem-solving. Majority of students in the year 11 cohort will be expected to have made the required progress according to their key stage 2 results. Ideally all students will have passed their GCSE Mathematics.</p>

<p><b><u>Assessment:</u></b></p> <p>Students are assessed at the end of every half term, usually partake in mock exams in the great hall or in the form of in class assessments.</p>	<p><b><u>Assessment:</u></b></p> <p>Students are assessed at the end of every half term, usually partake in mock exams in the great hall or in the form of in class assessments.</p>	<p><b><u>Assessment:</u></b></p> <p>Students are assessed at the end of every half term, usually partake in mock exams in the great hall or in the form of in class assessments.</p>
<p><b><u>Literacy:</u></b></p> <p>Students need to appreciate mathematical language and are encouraged to use these words accurately in class. They need to spell correctly as they are awarded for quality of written communication in exams. Students often use the back of their exercise books in order to write definitions and key words to memorise and remember.</p>	<p><b><u>Literacy:</u></b></p> <p>Students need to appreciate mathematical language and are encouraged to use these words accurately in class. They need to spell correctly as they are awarded for quality of written communication in exams. Students often use the back of their exercise books in order to write definitions and key words to memorise and remember.</p>	<p><b><u>Literacy:</u></b></p> <p>Students are developing their ability to decode questions in order to identify suitable methods for their calculations. This is emphasised through teaching students to notice topic specific terminology and key words in questions for use in analysing functional questions which demonstrate real life situations. Students regularly have literacy objectives in their lessons which highlight mathematical terminology and their definitions.</p>
<p><b><u>Numeracy:</u></b></p> <p>Numeracy is consistently assessed in class. Students need to recall basic multiplication times tables and need to perform fundamental arithmetic operations.</p>	<p><b><u>Numeracy:</u></b></p> <p>Numeracy is consistently assessed in class. Students need to recall basic multiplication times tables and need to perform fundamental arithmetic operations.</p>	<p><b><u>Numeracy:</u></b></p> <p>Numeracy is consistently assessed in class. Students need to recall basic multiplication times tables and need to perform fundamental arithmetic operations.</p>
<p><b><u>ICT:</u></b></p> <p>Autograph and Geogebra are used to plot graphs and functions.</p>	<p><b><u>ICT:</u></b></p> <p>Autograph and Geogebra are used to plot graphs and functions.</p>	<p><b><u>ICT:</u></b></p> <p>Autograph and Geogebra are used to plot graphs and functions.</p>
<p><b><u>Life in Modern Britain:</u></b></p> <p>Allowing discussion and debate on the use and abuse of statistics in the media</p>	<p><b><u>Life in Modern Britain:</u></b></p> <p>Students understand the implications of dealing with interest and its effect on mortgages, dealing with lottery and gambling. They are also encouraged to understand how life came about in the preciseness of the golden ratio and its importance in different cultures and religions.</p>	<p><b><u>Life in Modern Britain:</u></b></p> <p>Students recall the lives of some of the greatest mathematicians of time and their efforts in applying algebra to situations in order to help solve life problems.</p>

<p><b><u>SMSC:</u></b></p> <p>Pupils investigating different number sequences and where they occur in the real world</p>	<p><b><u>SMSC:</u></b></p> <ul style="list-style-type: none"> <li>• knowledge of compound interest and depreciation (percentages), analysing and interpreting data (statistics).</li> <li>• knowledge of applications of Pythagoras and Trigonometry in real life situations.</li> </ul>	<p><b><u>SMSC:</u></b></p> <p>Theory of calculus and its applications in real life</p>
<p><b><u>Meeting the needs of individual students &amp; Additional Support:</u></b></p> <p>To support learning, preparation and revision, students are provided with:</p> <ul style="list-style-type: none"> <li>• Extension classes which run every week.</li> <li>• Holiday booster sessions</li> <li>• Visits to revision lessons at Birkbeck University.</li> <li>• Attached academic tutors who provide one-one mentoring.</li> </ul> <p>My Maths logins to browse Mathematical topics according to grades and levels.</p>	<p><b><u>Meeting the needs of individual students &amp; Additional Support:</u></b></p> <p>To support learning, preparation and revision, students are provided with:</p> <ul style="list-style-type: none"> <li>• Extension classes which run every week.</li> <li>• Holiday booster sessions</li> <li>• Visits to revision lessons at Birkbeck University.</li> <li>• Attached academic tutors who provide one-one mentoring.</li> <li>• My Maths logins to browse Mathematical topics according to grades and levels.</li> </ul>	<p><b><u>Meeting the needs of individual students &amp; Additional Support:</u></b></p> <p>To support learning, preparation and revision, students are provided with:</p> <ul style="list-style-type: none"> <li>• Extension classes which run every week.</li> <li>• Holiday booster sessions</li> <li>• Visits to revision lessons at Birkbeck University.</li> <li>• Attached academic tutors who provide one-one mentoring.</li> <li>• My Maths logins to browse Mathematical topics according to grades and levels.</li> </ul>
<p><b><u>Extra-Curricular Activities &amp; Club:</u></b></p> <p>There are extension classes for students not meeting their targets. These students are identified through results in mock exams. They are provided with extra support, mentoring and resources and then assessed every week to monitor revised progression.</p>	<p><b><u>Extra-Curricular Activities &amp; Club:</u></b></p> <p>There are extension classes for students not meeting their targets. These students are identified through results in mock exams. They are provided with extra support, mentoring and resources and then assessed every week to monitor revised progression.</p>	<p><b><u>Extra-Curricular Activities &amp; Club:</u></b></p> <p>There are extension classes for students not meeting their targets. These students are identified through results in mock exams. They are provided with extra support, mentoring and resources and then assessed every week to monitor revised progression.</p>
<p><b><u>Independent Study/ Homework:</u></b></p> <p>Homework is set once every week and then marked and formally diagnostically marked within three weeks. Students are informed of their targets, areas of improvements and also notified of their strengths.</p>	<p><b><u>Independent Study/ Homework:</u></b></p> <p>Homework is set once every week and then marked and formally diagnostically marked within three weeks. Students are informed of their targets, areas of improvements and also notified of their strengths.</p>	<p><b><u>Independent Study/ Homework:</u></b></p> <p>Homework is set once every week and then marked and formally diagnostically marked within three weeks. Students are informed of their targets, areas of improvements and also notified of their strengths.</p>

<p><b><u>Resources for Learning Support and VLE:</u></b></p> <p>The VLE is open for students both at lunch and break times and one hour before the school day. Students in this year are encouraged to independently use the My Maths website to go through content taught in class or for further revision. Each student has an individual login and a password.</p>	<p><b><u>Resources for Learning Support and VLE:</u></b></p> <p>The VLE is open for students both at lunch and break times and one hour before the school day. Students in this year are encouraged to independently use the My Maths website to go through content taught in class or for further revision. Each student has an individual login and a password.</p>	<p><b><u>Resources for Learning Support and VLE:</u></b></p> <p>The VLE is open for students both at lunch and break times and one hour before the school day. Students in this year are encouraged to independently use the My Maths website to go through content taught in class or for further revision. Each student has an individual login and a password. Students also have access to revision guides and workbooks provided by the school to assist in preparation for GCSE Mathematics.</p>
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