











CURRICULUM MAP FOR MATHS YEAR 11

<p>The following topics will be covered and then any additional topics to be revisited will be generated from data collected throughout the year.</p> <p>Probability and Statistics</p> <p>Statistics</p> <ul style="list-style-type: none"> - Interpret, construct and critique the following statistical diagrams: <ul style="list-style-type: none"> o Two way tables o Frequency trees o Bar charts o Stem and leaf diagrams o Pictograms o Pie charts o Frequency polygons - Calculate averages from a list, and frequency table and critique the use of them in different situations. - Calculate the modal group, the group in which the median falls and the estimated mean for grouped continuous data. - Appreciate when a box plot can be used and how to construct from a data list. - Interpret box plots and be able to identify the median, upper and lower quartile (and calculate the interquartile range). - Compare distributions from box plots. - Construct cumulative frequency diagrams for grouped continuous data. - Interpret cumulative frequency diagrams and be able to calculate estimates for the median, upper and lower quartiles (and interquartile range). - Transfer statistical measures from cumulative frequency diagrams to box plots and vice versa. - Identify the difference between a bar chart and histogram. - Construct a histogram for grouped continuous data. - Interpret histograms including calculating missing frequencies from the diagram. - Calculate an estimate of the median from a histogram and calculate proportions from it. <p>Probability</p> <ul style="list-style-type: none"> - Systematic listing of events (including sample space) - Calculating probabilities from tables and diagrams - Probabilities of exhaustive events sum to 1. - Have an understanding that the larger sample means relative frequency will tend towards theoretical probability. - Calculate probabilities from statistical diagrams including two way tables, frequency trees, Venn diagrams, box plots, cumulative frequency diagrams and histograms. - Complete and use tree diagrams for combined independent events. - Complete and use tree diagrams for combined dependent events. - Use probability and set notation such as $p(A)$, $p(A')$, $p(A \cup B)$ and $p(A \cap B)$ from Venn diagrams. 		<p>Students will read worded problems – with pronunciation corrected when necessary. Key words to continue to be used from previous years but additional:</p> <ul style="list-style-type: none"> Lower quartile Upper quartile Interquartile range Cumulative Histogram Dependent events
		<p>Students will practise writing their answers showing full workings out and understand what they will be awarded individual marks for using a mark scheme.</p>
		<p>In order to ease the understanding of exam questions, using correct terminology will be emphasised in lessons. Students will also be encouraged to discuss their answers with peers when relevant to develop their understanding of keywords further.</p>
		<p>Homework - Extended Do Now Topics</p> <p>Weekly exam style questions on topics which are bespoke to each student, based on their individual needs from their mock exams.</p>







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<ul style="list-style-type: none"> - Calculate conditional probabilities and be able to read and interpret $p(A B)$ 		
<p>Algebra and Sequences</p> <p>Algebra</p> <ul style="list-style-type: none"> - Solve linear equations - Solve linear inequalities and represent the solution set on a number line. - Set up and solve linear simultaneous equations - Solving quadratics by factorising, completing the square and use of the quadratic formula (and classwiz!!!) - Application of writing and solving quadratic equations from previous topic... Use a probability of combined dependent events to calculate an unknown (number of sweets to begin with etc). - Solving non linear simultaneous equations - Solving quadratic inequalities - Rearranging equations to gain an iterative formula. - Use of iterative formulae to find estimates of solutions to equations. - Have an appreciation for convergence with respect to solutions from iterative formulae becoming more accurate the more iterations that are completed. - Algebraic proof <p>Sequences</p> <ul style="list-style-type: none"> - Recognise arithmetic, Fibonacci, geometric and quadratic sequences. - Use the nth term to generate any arithmetic sequence. - Calculate the nth term of an arithmetic sequence. - Calculate the nth term of a quadratic sequence. - Calculate the nth term of a geometric sequence. 		<p>Students will read worded problems – with pronunciation corrected when necessary. Key words to continue to be used from previous years but additional:</p> <p>Solution set Iteration Convergence Vertex/turning point (of a graph) Root (of a graph)</p>
<ul style="list-style-type: none"> - Solving non linear simultaneous equations - Solving quadratic inequalities - Rearranging equations to gain an iterative formula. - Use of iterative formulae to find estimates of solutions to equations. - Have an appreciation for convergence with respect to solutions from iterative formulae becoming more accurate the more iterations that are completed. - Algebraic proof 		<p>Students will practise writing their answers showing full workings out and understand what they will be awarded individual marks for using a mark scheme.</p>
<p>Graphs, Proportion and Similarity & Congruence</p> <p>Graphs</p> <ul style="list-style-type: none"> - Name and identify horizontal and vertical lines - Plot linear graphs from their equation - Calculate the gradient and identify the y-intercept of a given linear graph - Use a tangent to estimate the gradient of a curve at any given point. - Calculate the area under a graph and be able to interpret this as distance in a velocity time graph. - Understand the meaning and identify from a quadratic graph: vertex/turning point and roots. - Use a table of tables to draw quadratic, cubic and reciprocal graphs. - Recall the shape of trigonometric graphs for $0 \leq \theta \leq 360$ - Identify and draw the graph of a circle from its equation. - Transformations of graphs when written using function notation 		<p>In order to ease the understanding of exam questions, using correct terminology will be emphasised in lessons. Students will also be encouraged to discuss their answers with peers when relevant to develop their understanding of keywords further.</p>
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<p>Proportion</p> <ul style="list-style-type: none"> - Use of ratio tables to determine whether two variables are directly proportional. - Write formulae connecting two variables in direct or <i>inverse proportion</i> by calculating the constant of proportionality. - Use formulae for proportion to calculate an unknown. - <i>Identify graphs showing a direct or inversely proportional relationship.</i> 		
<p>Similarity & Congruence</p> <ul style="list-style-type: none"> - Reflect, rotate and translate given shapes understanding that these transformations produce congruent shapes. - Enlarge a given shape by a given scale factor, including <i>fractional and negative and understand that this produces a similar shape (unless the scale factor is -1 and it is congruent)</i> - Calculate missing lengths in similar shapes. - <i>Understand what affect on a linear scale factor area and volume will have and use it to calculate missing length, areas or volumes.</i> - <i>Complete geometric proof of congruency by SSS, SAS, RHS, ASA in triangles.</i> <p>Vectors</p> <ul style="list-style-type: none"> - apply addition and subtraction of vectors, multiplication of vectors by a scalar, and diagrammatic and column representations of vectors - <i>use vectors to construct geometric arguments and proofs</i> <p>Alternate segment theorem</p> <p>Construction and Loci</p>		<p>Students will read worded problems – with pronunciation corrected when necessary. Key words to continue to be used from previous years but additional:</p> <p>(mathematically) similar Vector Construct Bisect</p>
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		<p>In order to ease the understanding of exam questions, using correct terminology will be emphasised in lessons. Students will also be encouraged to discuss their answers with peers when relevant to develop their understanding of keywords further.</p>
		<p>Homework - Extended Do Now Topics Weekly exam style questions on topics which are bespoke to each student, based on their individual needs from their mock exams.</p>