KS4 Option Group: Statistics and Further Maths Curriculum Mapping

Year 10 GCSE Statistics (Edexcel GCSE (9-1) Statistics 1ST0 Higher)						
Term	**Autumn (1)**	**Autumn (2)**	**Spring (1)**	**Spring (2)**	**Summer (1)**	**Summer (2)**
Topic(s)/ Subjects(s)	Chapter 4: Scatter diagrams and correlation	Chapter 1: Collection of Data Chapter 2: Processing and Representing Data	Chapter 1: Collection of data Chapter 5: Time series	Chapter 3: Summarising Data Chapter 6: Probability	Chapter 7: Index Numbers Chapter 3: Summarising Data	Project – Large Data Set
Knowledge and skills (Content)	RECAP LESSONS: Scatter Graphs / correlation / causal relationships / interpolation and extrapolation The Equation of a Line of Best Fit Spearman's Rank Correlation Coefficient Pearson's Product Moment Correlation Coefficient	Describing Data Primary and Secondary Data Populations Hypotheses Designing Investigations Comparative Pie Charts Random Sampling Non-Random Sampling Population Pyramids Choropleth Maps	Collection of Data Questionnaires and Interviews Problems with Collected Data Controlling Extraneous Variables Line Graphs and Time Series (Revision of GCSE Maths) Trend Lines Variations in a Time Series Moving Averages Estimating Seasonal Variations and Making Estimates	Averages from Frequency Tables Averages from Grouped Data (Revision of GCSE Maths) Transforming Data Geometric and Weighted Mean The Meaning of Probability Experimental Probability (Revision of GCSE Maths) Using Probability to Assess Risk Venn Diagrams (Covered in GCSE Maths – Checklist 3) Harder Examples involving "given that" – not using the 'given that' formula Mutually Exclusive and Exhaustive Events The General Addition Law Independent Events Tree Diagrams (with and without replacement revision of GCSE Maths) Conditional Probability The Formula for Conditional Probability	Index Numbers RPI, CPI and GDP Chain Base Index Numbers Rates of Change Measures of Dispersion for Discrete Data (including Step Polygons) Cumulative Frequency Graphs (Revision of GCSE Maths) Measures of Dispersion for Grouped Data (Interpolation NEW) Standard Deviation Box Plots (Revision of GCSE Maths) and Outliers Skewness Deciding Which Average to Use Comparing Data Sets Making Estimates	Project – Large data set used from Edexcel A level Maths
Assessment	Assessment 1 - Scatter Diagrams, SRCC, PMCC	Assessment 2 - Hyp Test, Planning, Comp Pie Charts, Sampling, Pop Pyramid, Choropleth	Assessment 3 - Questionnaires and Time Series SAS Exams. Modified past GCSE Higher Stats Paper 1 and Paper 2 (to only assess content covered)	Assessment 4 – Averages, Transforming Data and Probability	Assessment 5 – Index Numbers and Measures of Dispersion	End June: Full Past GCSE Higher Stats Exam Paper 1 – (with structured revision task)
Cross Curricular Links	**Geography**- Line graphs, scattergraphs, lines of best fit, **GCSE Maths –** Y9 Line of best best and correlation	**Geography**- Chloropleth graphs, populations pyramids (Y8 and Y12) Comparative pie charts	**GCSE Maths –** Y9 Questionnaires and Time Series **Science –** Time series (line graphs)	**GCSE Maths –** Y10 Autumn 2	**Geography** - IQR and cumulative frequency **Business -** Marketing **GCSE Maths –** Y10 Spring 2	**ICT** – Using excel to represent data on a larger scale
SMSC, British Values,	Students are encouraged to work collaboratively to enrich	Students are encouraged to work collaboratively to enrich	Students are encouraged to work collaboratively to enrich	Students are encouraged to work collaboratively to enrich	Students are encouraged to work collaboratively to enrich	Students are encouraged to work collaboratively to enrich

Cultural Capital	their problem solving skills and help build each other's confidence in the subject. Classes are small which helps build relationships within the group.	their problem solving skills and help build each other's confidence in the subject. Classes are small which helps build relationships within the group.	their problem solving skills and help build each other's confidence in the subject. Classes are small which helps build relationships within the group. Sticker charts for structured revision stuck on the wall in the classroom during exam preparation. This promotes healthy competition amongst peers.	their problem solving skills and help build each other's confidence in the subject. Classes are small which helps build relationships within the group.	their problem solving skills and help build each other's confidence in the subject. Classes are small which helps build relationships within the group. Sticker charts for structured revision stuck on the wall in the classroom during exam preparation. This promotes healthy competition amongst peers.	their problem solving skills and help build each other's confidence in the subject. Classes are small which helps build relationships within the group. Sticker charts for structured revision stuck on the wall in the classroom during exam preparation. This promotes healthy competition amongst peers.
CEIAG	**Data analysts** - uses statistical methods to gather and interpret data. They also identify trends and patterns in a data set. They report their findings to their clients, which helps them to determine or anticipate their business requirements.	**Biostatistician –** employs their mathematical skills and data knowledge in the biology sector. They gather, analyse and evaluate data regarding living organisms and use their medical research studies to draw conclusions. They may also collaborate with scientists and other statisticians in the design and implementation of research studies.	**Brand optimisation analyst** - researches market data to identify and analyse trends. This enables them to create strategies to help organisations optimise their sales and advertising activities.	**Actuary** - applies their statistical knowledge to assess financial risk for a company. This is particularly relevant to the insurance industry. They also help clients to develop management strategies and policies.	**Business analyst** - collects and analyses financial data to identify any problems and work out solutions for businesses. Based on this data, they create new business models and, in collaboration with the IT and finance teams, develop strategies to help the business improve efficiencies, boost productivity and increase profits.	**Weather Forecasting -** Evaluating historical trends is often a trusted method for predicting future patterns. Using applied statistics, organizations can capture real data sets to extrapolate useful information for decision-making. Tracking weather patterns over time equips statisticians to predict the future.
Learning outside the classroom	**Homework** – Fortnightly exam style questions based on previous topics taught for recall and retention. **At home support** – access to MyMaths, MathsWatch and Mathsgenie and Stats Academy to support learning at home.	**Homework** – Fortnightly exam style questions based on previous topics taught for recall and retention. **At home support** – access to MyMaths, MathsWatch and Mathsgenie and Stats Academy to support learning at home.	**Homework** – Fortnightly exam style questions based on previous topics taught for recall and retention. **At home support** – access to MyMaths, MathsWatch and Mathsgenie and Stats Academy to support learning at home.	**Homework** – Fortnightly exam style questions based on previous topics taught for recall and retention. **At home support** – access to MyMaths, MathsWatch and Mathsgenie and Stats Academy to support learning at home.	**Homework** – Fortnightly exam style questions based on previous topics taught for recall and retention. **At home support** – access to MyMaths, MathsWatch and Mathsgenie and Stats Academy to support learning at home.	**Homework** – Fortnightly exam style questions based on previous topics taught for recall and retention. **At home support** – access to MyMaths, MathsWatch and Mathsgenie and Stats Academy to support learning at home.
Additional Subject Specific Information	**Next Steps:** Year 12 Statistics – Chapter 1, 4, 7	**Next Steps:** Year 12 Statistics – Chapter 1, 4	**Next Steps:** Year 12 Statistics – Chapter 1, 5	**Next Steps:** Year 12 Statistics – Chapter 2, 3, 5	**Next Steps:** Year 12 Statistics – Chapter 2, 3, 6, 7	**Next Steps:** Year 12 Statistics – Chapter 1

Year 10 Level 2 Further Mathematics (AQA Level 2 (9-1) Further Mathematics 8365)						
Term	**Autumn (1)**	**Autumn (2)**	**Spring (1)**	**Spring (2)**	**Summer (1)**	**Summer (2)**
Topic(s)/ Subjects(s)	Number and Algebra I, Coordinate Geometry	Algebra III and Coordinate Geometry	Calculus	Calculus	Algebra IV	Geometry II
Knowledge and skills (Content)	GCSE Algebra Revision The Binomial Expansion The Product Rule for Counting Midpoint and Length Between Two Points Equations of Parallel and Perpendicular Lines	Function notation Domains and Ranges Composite Functions Quadratic Graphs Inverse Functions Exponential Functions	Basics of Differentiation Tangents and Normals Increasing and Decreasing Functions	The Second Derivative Stationary Points Applications of Minima and Maxima	'Hidden' Quadratic Equations Simultaneous Equations Triple Simultaneous Equations Factor Theorem	Area of a Triangle Sine Rule Cosine Rule Trigonometry in 3 Dimensions
Assessment	N/A	**Mini test** – created paper with past exam questions to assess content covered.	N/A	N/A	**Assessment 1** – created paper with past exam questions to assess content covered.	**SAS Exam** (delayed to accommodate Statistics SAS Exam) - created paper with past exam questions to assess content covered.
Cross Curricular Links	Statistics and Probability Analysis Geography - Weather forecasting Architecture – Parallel and perpendicular lines Satellite Navigation – Distance between points Y9 Maths – Ch 6	Science – Modelling Physics – Half lives Medicine – infection rates Y11 Maths – Ch 17	Science – deriving equations, decay rates, seismology, growth of bacteria/cancer, motion of waves Economics – stock market projections	Science – deriving equations, decay rates, seismology, growth of bacteria/cancer, motion of waves Economics – stock market projections	Science – creating amalgams, speed/distance/time problems Economics – optimising company profits Engineering – roller coaster design Y10 Maths – Ch 9	Architecture – bridge strength/cable support towers, install sloped roof Music – modifying sound Physics – Wave theory, AC current Y10 Maths – Ch 13
SMSC, British Values, Cultural Capital	Mathematician of the Month and Diversion and Inclusion posters. Social developing problem-solving skills, resilience and mathematical reasoning are included in most lessons. Students are encouraged to where applicable, work collaboratively, supporting each other's progress and building confidence.	Mathematician of the Month and Diversion and Inclusion posters. Social developing problem-solving skills, resilience and mathematical reasoning are included in most lessons. Students are encouraged to where applicable, work collaboratively, supporting each other's progress and building confidence.	Mathematician of the Month and Diversion and Inclusion posters. Social developing problem-solving skills, resilience and mathematical reasoning are included in most lessons. Students are encouraged to where applicable, work collaboratively, supporting each other's progress and building confidence.	Mathematician of the Month and Diversion and Inclusion posters. Social developing problem-solving skills, resilience and mathematical reasoning are included in most lessons. Students are encouraged to where applicable, work collaboratively, supporting each other's progress and building confidence.	Mathematician of the Month and Diversion and Inclusion posters. Social developing problem-solving skills, resilience and mathematical reasoning are included in most lessons. Students are encouraged to where applicable, work collaboratively, supporting each other's progress and building confidence.	Mathematician of the Month and Diversion and Inclusion posters. Social developing problem-solving skills, resilience and mathematical reasoning are included in most lessons. Students are encouraged to where applicable, work collaboratively, supporting each other's progress and building confidence.
CEIAG	Weather Forecaster Statistician Architect Satellite Navigation Engineer	Engineering (modelling) Statistician (modelling) Virologist Radiation Scientist	Seismologist Microbiologist Economist/Stock broker Oncologist	Seismologist Microbiologist Economist/Stock broker Oncologist	Air traffic controller (ensuring planes don't meet at the same point) Financial Analyst Engineer	Music producer Architect Physicist
Learning outside the classroom	**Homework** - Alternated topic specific homework and recall based homework **At home support** – Access to revision guides and workbooks	**Homework** - Alternated topic specific homework and recall based homework **At home support** – Access to revision guides and workbooks	**Homework** - Alternated topic specific homework and recall based homework **At home support** – Access to revision guides and workbooks	**Homework** - Alternated topic specific homework and recall based homework **At home support** – Access to revision guides and workbooks	**Homework** - Alternated topic specific homework and recall based homework **At home support** – Access to revision guides and workbooks	**Homework** - Alternated topic specific homework and recall based homework **At home support** – Access to revision guides and workbooks
Additional	**Next steps:**	**Next steps:**	**Next steps:**	**Next steps:**	**Next steps:**	**Next steps:**

Subject Specific Information	Further binomial expansion (AS Pure Ch 8) Graphical equations of circles (AS Ch 6)	Trigonometric modelling (A Level Pure Ch 7) Modelling in Mechanics (AS Mech Ch 8, AS Pure Ch 2) Exponentials and logarithms (AS Pure Ch 14) Fourier series (University) Complex functions (University)	Integration (AS Pure Ch 13) Differential equations (A Level Pure Ch 9/10, A Level Core Ch 7/8) Partial differential equations (University)	Integration (AS Pure Ch 13) Differential equations (A Level Pure Ch 9/10, A Level Core Ch 7/8) Partial differential equations (University)	Solving matrix equations (AS Core Ch 6) Factor/Remainder theorem (AS Pure Ch 7) Partial Fractions (A Level Pure Ch 1) Roots of polynomials (AS Core Ch 4) Linear programming (AS Decision Ch 6)	Solving matrix equations (AS Core Ch 6) Factor/Remainder theorem (AS Pure Ch 7) Partial Fractions (A Level Pure Ch 1) Roots of polynomials (AS Core Ch 4)

Year 11 GCSE Statistics (Edexcel GCSE (9-1) Statistics 1ST0 Higher)						
Term	**Autumn (1)**	**Autumn (2)**	**Spring (1)**	**Spring (2)**	**Summer (1)**	**Summer (2)**
Topic(s)/ Subjects(s)	Chapter 8: Probability Distributions Chapter 1: Collection of Data	Utilize Question Level Analysis results from SAS full GCSE paper to inform planning				
Knowledge and skills (Content)	The Shape of a Distribution Histograms with Unequal Class Widths (Revision of GCSE Maths) Binomial Distribution Normal Distributions Standardised Scores Quality Assurance and Control Charts Petersen Capture-Recapture Formula (Revision of GCSE Maths) Stratified Sampling (Revision of GCSE Maths)					
Assessment	Assessment 6 – Probability Distributions, Quality Assurance and Sampling Methods End of September: Past GCSE Higher Exam Paper 2 (with structured revision)	Early November: Past GCSE Higher Exam Paper 2 December Trial Exams: Higher Paper 1 and Paper 2 (all with structured revision tasks)	Monthly past GCSE Paper (with structured revision task) End Jan End Feb End March	Past GCSE papers	GCSE Exams	
Cross Curricular Links	**GCSE Maths -** Y10 Spring 2 **Geography –** Sampling populations **Science –** Sampling populations					
SMSC, British Values, Cultural Capital	Students are encouraged to work collaboratively to enrich their problem solving skills and help build each other's confidence in the subject. Classes are small which helps build relationships within the group.	Students are encouraged to work collaboratively to enrich their problem solving skills and help build each other's confidence in the subject. Classes are small which helps build relationships within the group. Sticker charts for structured revision stuck on the wall in the classroom during exam preparation. This promotes healthy competition amongst peers.	Students are encouraged to work collaboratively to enrich their problem solving skills and help build each other's confidence in the subject. Classes are small which helps build relationships within the group.	Students are encouraged to work collaboratively to enrich their problem solving skills and help build each other's confidence in the subject. Classes are small which helps build relationships within the group. Sticker charts for structured revision stuck on the wall in the classroom during exam preparation. This promotes healthy competition amongst peers.		
CEIAG	**Machine engineers** - uses their data analytics and software engineering skills to create self-					

	running software that requires no direct instructions. They assess and analyse data to design and create artificial intelligence (AI) algorithms that are capable of learning and performing certain tasks automatically and often autonomously. The software they develop is used in many applications, including self-driving cars and buses.					
Learning outside the classroom	**Homework** – Fortnightly exam style questions based on previous topics taught for recall and retention. **At home support** – access to MyMaths, MathsWatch and Mathsgenie and Stats Academy to support learning at home. After school revision sessions	**Homework** – Fortnightly exam style questions based on previous topics taught for recall and retention. **At home support** – access to MyMaths, MathsWatch and Mathsgenie and Stats Academy to support learning at home. After school revision sessions	**Past GCSE Exam Papers –** Completed as homeworks **At home support** – access to MyMaths, MathsWatch and Mathsgenie and Stats Academy to support learning at home. After school revision sessions			
Additional Subject Specific Information	**Next Steps:** Year 12 Statistics – Chapter 1, 4, ,6, 7					

Year 11 Level 2 Further Mathematics (AQA Level 2 (9-1) Further Mathematics 8365)						
Term	**Autumn (1)**	**Autumn (2)**	**Spring (1)**	**Spring (2)**	**Summer (1)**	**Summer (2)**
Topic(s)/ Subjects(s)	Algebra IV and Geometry I	Geometry I and Coordinate Geometry	Matrices	Utilize Question Level Analysis results from full GCSE paper to inform planning		
Knowledge and skills (Content)	GCSE Sequences recap Limiting Values of sequences Quadratic Inequalities Exact trig values Trig graphs Trig identities	GCSE Circle theorems recap Circle theorems proofs Equation of a circle Circle theorems and equations of circles Algebraic proof	Multiplying matrices Matrix transformations The identity matrix Transformations of the unit square Combining transformations			
Assessment	**Mini test** – created paper with past exam questions to assess content covered.	December Trial Exams: Specially selected past paper based on current knowledge (with structured revision task)	**Mini test** – created paper with past exam questions to assess content covered.	Past GCSE papers	GCSE Exams	
Cross Curricular Links	Music – modifying sound Physics – Wave theory, AC current Y11 Maths Ch 15	Y11 Maths Ch 16 Physics – angular momentum	Y11 Maths Ch18			
SMSC, British Values, Cultural Capital	Mathematician of the Month and Diversion and Inclusion posters. Social developing problem-solving skills, resilience and mathematical reasoning are included in most lessons. Students are encouraged to where applicable, work collaboratively, supporting each other's progress and building confidence.	Mathematician of the Month and Diversion and Inclusion posters. Social developing problem-solving skills, resilience and mathematical reasoning are included in most lessons. Students are encouraged to where applicable, work collaboratively, supporting each other's progress and building confidence.	Mathematician of the Month and Diversion and Inclusion posters. Social developing problem-solving skills, resilience and mathematical reasoning are included in most lessons. Students are encouraged to where applicable, work collaboratively, supporting each other's progress and building confidence.	Mathematician of the Month and Diversion and Inclusion posters. Social developing problem-solving skills, resilience and mathematical reasoning are included in most lessons. Students are encouraged to where applicable, work collaboratively, supporting each other's progress and building confidence.	Mathematician of the Month and Diversion and Inclusion posters. Social developing problem-solving skills, resilience and mathematical reasoning are included in most lessons. Students are encouraged to where applicable, work collaboratively, supporting each other's progress and building confidence.	
CEIAG	Aerospace/Mechanical engineer Music producer Physicist	Aerospace/Mechanical engineer	Computer graphic artist Quantum physicist			
Learning outside the classroom	**Homework** - Alternated topic specific homework and recall based homework **At home support** – access to MyMaths, MathsWatch, past papers and Mathsgenie to support learning at home. After school revision sessions	**Homework** - Alternated topic specific homework and recall based homework **At home support** – access to MyMaths, MathsWatch, past papers and Mathsgenie to support learning at home. After school revision sessions	**Homework** - Alternated topic specific homework and recall based homework **At home support** – access to MyMaths, MathsWatch, past papers and Mathsgenie to support learning at home. After school revision sessions	**Homework** - Alternated topic specific homework and recall based homework **At home support** – access to MyMaths, MathsWatch, past papers and Mathsgenie to support learning at home. After school revision sessions	**Homework** - Alternated topic specific homework and recall based homework **At home support** – access to MyMaths, MathsWatch, past papers and Mathsgenie to support learning at home. After school revision sessions	
Additional Subject Specific Information	**Next Steps:** Sequences and series (A Level Pure Ch 3) Trigonometric identities and equations (AS Pure Ch 10)	**Next Steps:** Circles (AS Pure Ch 6) Algebraic methods (AS Pure Ch 7) Proof by induction (AS Core Ch 8)	**Next Steps:** Matrices (AS Core Ch 6) Linear transformations (AS Core Ch 7)			