

Elements Curriculum Plan

Subject: GCSE Statistics (Higher and Foundation)

Building Block 6a ≈ KS4 Statistics Foundation Higher

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Half-Term	Topic/Content	Skills	Personal Development
Autumn 1	The Data Handling Cycle	<ul style="list-style-type: none"> ● Understand what the data handling cycle is and the importance of it ● Be able to create a hypothesis and understand what makes a good hypothesis ● Introduce new terminology and start a statistic glossary 	Communication Problem Solving Life Skills Teamwork
	Types of Data	<ul style="list-style-type: none"> ● Primary and Secondary ● Discrete, continuous ● Qualitative and quantitative 	Communication Problem Solving Life Skills Teamwork
	Collecting Data	<ul style="list-style-type: none"> ● Population and Census v sample and sampling ● Survey Methods ● Sampling Frame and sampling methods (Random, stratified, systematic, cluster, quota and conveniences) ● Pilot surveys and questionnaires ● Explanatory ad response variables. ● Be able to state the advantages and disadvantages of each of the ways of data collections ● Consider sample size and how that can affect the data. ● Explore Quality Assurance and understand it's importance 	Communication Problem Solving Life Skills Teamwork
Assessment			

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Autumn 2	Graphs-Simple	<ul style="list-style-type: none"> • Multiple and composite bar charts • Choropleth maps • Population pyramids 	Communication Problem Solving Life Skills Teamwork
	Graphs- Box plots	<ul style="list-style-type: none"> • Calculate Median, Upper quartile (Q3/UQ), Lower quartile(Q1/LQ) and interquartile range (IQR) • Draw box plots and compare two or more data sets using box plots • Use box plots to compare and contrast average and spread of distributions 	Communication Problem Solving
	Graphs- Cumulative Frequency	<ul style="list-style-type: none"> • Calculate Cumulative Frequency Values • Draw a cumulative frequency graph • Estimate values from graphs, including quartiles and medians • Cumulative frequency Step polygons 	Communication Problem Solving Life Skills
	Graphs- Shapes of distributions	<ul style="list-style-type: none"> • Look at shape of distributions • Determine symmetries or skew both positive and negative 	Communication Problem Solving
	Measures of Location- Mean	<ul style="list-style-type: none"> • Use Scaling to calculate mean • Calculate geometric mean • Use and find weighted means and averages 	Communication Problem Solving Life Skills
MOL– Index numbers	<ul style="list-style-type: none"> • Simple Index numbers: Calculating new price Calculating price in base year Calculating Index number • Chain base numbers • Weighted Index numbers • 	Communication Problem Solving Life Skills	

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	MOL – Time series	<ul style="list-style-type: none"> • Moving averages • Trend lines • Seasonal fluctuation • Average seasonal variation • Moving averages 	Communication Problem Solving Life Skills
	MOL – Population Statistics	<ul style="list-style-type: none"> • Population averages • Crude birth and death rates 	
Assessment			
Spring 1	Measures of Spread- IQR and Outliers	<ul style="list-style-type: none"> • Compare ranges of different data sets • Interpret ranges from statistical diagrams and charts • Use lower and upper quartile to calculate interquartile range • $Q_1: \frac{1}{4}(n+1)$th value $Q_2: \frac{1}{2}(n+1)$th value $Q_3: \frac{3}{4}(n+1)$th value • Understand what an outlier are: $Q_1 - 1.5 \times IQR$ or $Q_3 + 1.5 \times IQR$ • Identify outliers and be able to suggest reasons why they might be there. 	Communication Problem Solving Life Skills
	MOS- Deciles and percentiles	<ul style="list-style-type: none"> • Use and understand D_n and P_n notation • Calculate percentile range 	Communication Problem Solving Life Skills
	MOS- Variance and Standard Deviation	<ul style="list-style-type: none"> • Calculate the Standard deviation and variance of a discrete set of scores • Calculate the Standard deviation and variance of a discrete frequency distribution 	Self -Awareness
	MOS – Standardised scores	<ul style="list-style-type: none"> • Using standardised scores to complete sets of data 	

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	MOS- The Normal Distribution	<ul style="list-style-type: none"> • Know that 95% of the distribution is within 2 standard deviations of the mean • Know that 99% is within 3 standard deviations from the mean 	Communication Problem Solving Life Skills
	Correlation and regression – Scatter diagrams/ Lines of best fit	<ul style="list-style-type: none"> • Draw a scatter diagram • Draw a line of best fit • State the correlations • Be able to interpolate and extrapolate from the scatter diagram • Line of best fit passing through mean of both variables • Calculating equation of line of best fit 	
	CAR- Types of correlation	<ul style="list-style-type: none"> • Correlation • Casualty • Spurious correlation 	
	Non- linear data	<ul style="list-style-type: none"> • $y \propto \frac{1}{x}$, $y \propto x^2$, $y \propto \sqrt{x}$ 	
	CAR- SRCC	<ul style="list-style-type: none"> • Understand how to calculate Spearman’s rank correlation coefficient • Understand and be able to calculate Product Moment Correlation Coefficient 	
Assessment			

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Spring 2	Probability- Mutually exclusive and independent events	<ul style="list-style-type: none"> • Mutually exclusive events are events that cannot occur at the same time • $P(A \cup B) = P(A) + P(B)$ • Exhaustive events • Independent Events, where the outcome of one doesn't affect the other • $P(A \cap B) = P(A) \times P(B)$ • Extend to three events 	Communication Problem Solving Life Skills
	Probability- Odds and Simulation	<ul style="list-style-type: none"> • Understand and apply the relationship between Odds and probabilities • Modelling experiments to estimate probability, Eg random number generating, rolling of dice etc... 	Communication Problem Solving Life skills Staying safe
	Probability – Tree diagrams	<ul style="list-style-type: none"> • Illustrate the outcomes and associated probabilities of two sequential events • Illustrate the outcomes and associated probabilities of up to three sequential events of both independent and dependent events • Use tree diagrams to calculate the probability of conditional events. • 	Communication Problem Solving Life Skills Staying safe
	Probability- Venn Diagrams Probability distributions	<ul style="list-style-type: none"> • Construct Venn diagrams with 2 regions / up to three regions • Use Venn diagrams to calculate probabilities • Look at discrete uniform distribution- probability of every outcome the same, calculate the estimated mean and median • Binomial distribution: Two mutually exclusive outcomes (Success and failure), fixed number of trials, fixed probability of success, independent trials 	Communication Problem Solving Life Skills Staying safe Teamwork

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		<ul style="list-style-type: none"> • Normal distribution: symmetrical bell shaped curve, symmetry about the point • Understand 95% of distribution is within 2 standard deviations, 99% is within 3 standard deviations. 	
Assessment			
Summer 1	Revision and Assessment	<ul style="list-style-type: none"> • Revise and prepare for assessment using a variety of revision techniques 	Communication Problem Solving Life Skills Self Motivation Self awareness
Assessment			
Summer 2	Review and revision project	Sit Examination	Communication Problem Solving Life Skills Self Motivation Self awareness
Assessment			

Rationale –

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BB3-5

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BB6ab

As above, plus:

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