Richard Lander School — Statistics Curriculum Overview - 10/11

BE THE BEST YOU CAN

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2	
Reporting Y10	CfCs	BfL & Grades	CfCs	BfL & Grades		BfL & Report	
Year 10		Overview of the course, objectives, skills gained and the wider benefits of these skills and the course. 1. The collection of data • Hypotheses • Designing investigations • Strategies to deal with potential problems 1(b) Types of data • Describing data o Raw data, quantitative, qualitative, categorical, ordinal, discrete, continuous, ungrouped, grouped, bivariate and multivariate • Advantages and implications of merging/grouping data • Primary/secondary data o Advantages and disadvantages 1(c) Population and sampling • Population, sample frame and sample • Judgment, opportunity (convenience) and quota sampling 1(d) Collecting Data • Collecting sensitive content matter • Random Response 2(h) Estimation • Use summary statists to make estimates of population characteristics • Use sample data to predict population proportions • Know that sample size has an impact on reliability and replication • Apply Petersen capture recapture formula to calculate an estimate of the size of a population	1(d) Collecting data • Collection of data o Experimental (laboratory, field and natural), simulation, questionnaires, observation, reference, census, population and sampling • Questionnaires and interviews o Leading questions, avoiding biased sources, time factors, open/closed questions, different types of interview technique • Problems with collected data o Missing data, non-response, 'cleaning' data • Controlling extraneous variables o Control groups2. Processing, representing and analysing data ASSESSMENT 2(a) Representing data • Population pyramid, Choropleth map, Comparative pie chart Interpret and compare data sets represented pictorially • Cumulative frequency charts, Histograms, Box plots • Interpret and compare data sets represented graphically	2(a) Representing data • Histograms unequal class widths o Frequency density o Interpret and compare data sets displayed in histograms 2(a) Representing data • Justify appropriate form to represent data • Graphical misrepresentation • Determine skewness by inspection o Interpreting a distribution of data with reference to skewness o Calculating skewness • Comparing data sets represented in different formats	2(b) Measures of central tendency • Averages from raw or grouped data o Mean, median, mode • Weighted mean • Geometric mean • Justify appropriate average to use in context 2(c) Measures of dispersion • Range, quartiles, interquartile range (IQR), percentiles • Interpercentile range, interdecile range • Standard deviation • Identifying outliers by inspection • Identifying outliers by calculation • Comment on outliers in context • Compare data sets using appropriate measure of central tendency and measure of dispersion ASSESSMENT	Work Experience Week
Reporting Y11	CfCs & Grades	Rep & Grades	CfCs & Grades	BfL & Grades			

Year 11	2(c) Measures of dispersion • Standardised scores 2(d) Further summary statistics • Index numbers / weighted index numbers o Retail price index (RPI) o Consumer price index (CPI) o Gross domestic product (GDP) • Interpret data related to rates of change over time when given in graphical form	ASSESSMENT 2(e) Scatter diagrams and correlation • Explanatory (independent) variables and response (dependent) variables • Correlation o Distinction between correlation and causation • Line of best fit o Using the regression equation y= a+ bx • Calculate Spearman's rank correlation coefficient • Interpret Spearman's rank in context • Interpret Pearson's product moment correlation coefficient (PMCC) in context • Understand the distinction between Spearman's rank correlation coefficient and Pearson's product moment correlation coefficient (PMCC) 2(f) Time series • Moving averages • Identifying trends • Interpreting seasonal and cyclical trends in context • Mean seasonal variation o Predictions using average seasonal effect	3. Probability • Expected frequency of a specified characteristic within a sample or population • Use collected data and calculated probabilities to determine and interpret risk • Compare experimental data with theoretical predictions • Use two-way tables, sample space diagrams, tree diagrams and Venn diagrams to represent all the different outcomes possible for at most three events 3. Experimental and theoretical probability • Independent events • Conditional probability • Difference in terms of bias 3. Probability distributions • Binomial distribution o Notation B(n, p) o Conditions that make binomial model suitable o Mean (np) o Calculation of binomial probabilities	• Normal distribution o Notation N(μ, σ2) o Characteristics of Normal distribution o Conditions that make Normal model suitable o Approximately 95% of the data lie within two standard deviations of the mean and that 68% (just over two thirds) lie within one standard deviation of the mean 2(g) Quality assurance • Know that a set of sample means are more closely distributed than individual values from the same population. • Control charts o Use action and warning lines in quality assurance sampling applications. ASSESSMENT	Revision for Paper 1 and Paper 2	

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