

| | Specification context (bolded content is not assessed in GCSE Mathematics H) | Lessons | Keywords | Employability Skills and careers link |
|----------------------------------|--|--------------------|--|--|
| Autumn 1 6 weeks | Unit 1: The collection of data 1(a) Planning <ul style="list-style-type: none"> Hypotheses Designing investigations Strategies to deal with potential problems 1(b) Types of data <ul style="list-style-type: none"> Describing data Raw data, quantitative, qualitative, categorical, ordinal, discrete, continuous, ungrouped, grouped, bivariate and multivariate Advantages and implications of merging/grouping data Primary/secondary data Advantages and disadvantages 1(c) Population and sampling <ul style="list-style-type: none"> Population, sample frame and sample Judgment, opportunity (convenience) and quota sampling Random, systematic and quota sampling Advantages of each method Techniques to avoid bias Stratified sampling 2(h) Estimation <ul style="list-style-type: none"> Use summary statistics 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 <ul style="list-style-type: none"> Collection of data Experimental (laboratory, field and natural), simulation, questionnaires, observation, reference, census, population and sampling Reliability and validity Collecting sensitive content matter Random response Questionnaires and interviews Leading questions, avoiding biased sources, time factors, open/closed questions, different types of interview technique Problems with collected data Missing data, non-response, 'cleaning' data Controlling extraneous variables Control groups | 3 weeks | Tier 3 Bivariate Multivariate Sample frame Judgement sampling Opportunity sampling Quota sampling Cleaning data Extraneous variables Tier 2 Raw data Quantitative Qualitative Categorical Ordinal Discrete Continuous Outlier/anomaly Primary data Secondary data Population Control group/variable Bias Census Homework Dr Frost Maths tasks and written tasks linked to weekly content | Aiming high Numeracy Creativity Literacy Independence Listening Communication Presenting Teamwork Problem solving Staying positive Leadership Risk Manager https://www.unifrog.org/student/careers/school-subjects.k1/risk-management-specialist |
| Autumn 2 7 weeks | Unit 2: Processing and representing data 2(a) Tabulation <ul style="list-style-type: none"> Tally, tabulation, two-way tables Frequency tables 2(a) Representing data <ul style="list-style-type: none"> Pictogram Bar charts Pie chart Stem and leaf diagram Line graphs Bar line (vertical line) charts Frequency polygons Cumulative frequency (discrete and grouped) charts Histograms (equal class width), no frequency density Box plots Interpret and compare data sets represented graphically Histograms unequal class widths Frequency density Population pyramid Choropleth map Comparative pie chart Comparative 2D representations/comparative 3D representations. Interpret and compare data sets represented pictorially 2(a) Representing data <ul style="list-style-type: none"> Justify appropriate form to represent data Graphical misrepresentation Determine skewness by inspection Interpreting a distribution of data with reference to skewness Calculating skewness Comparing data sets represented in different formats | 3 weeks | Tier 3 Pictogram Stem and leaf diagram Frequency polygon Cumulative frequency graph Histograms Box plot Tier 2 Interpret Compare Homework Dr Frost Maths tasks and written tasks linked to weekly content | Aiming high Numeracy Creativity Literacy Independence Listening Communication Presenting Teamwork Problem solving Staying positive Leadership Structural Engineer https://www.unifrog.org/student/careers/school-subjects.k1/structural-engineer Assessment: Half Term Test - Unit 1 and first half of unit 2 |
| Spring 1 5.5 weeks | Unit 3: Processing, analysing and comparing data 2(b) Measures of central tendency <ul style="list-style-type: none"> Averages from raw or grouped data Mean, median, mode Weighted mean Geometric mean Justify appropriate average to use in context 2(c) Measures of dispersion <ul style="list-style-type: none"> 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 2(e) Scatter diagrams and correlation <ul style="list-style-type: none"> Explanatory (independent) variables and response (dependent) variables Correlation Positive, negative, zero, weak, strong Distinction between correlation and causation Line of best fit 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 <ul style="list-style-type: none"> Moving averages Identifying trends Interpreting seasonal and cyclical trends in context Mean seasonal variation Predictions using average seasonal effect | 2-3 weeks | Tier 3 Population pyramid Choropleth map Tier 2 Justify Skewness Homework Dr Frost Maths tasks and written tasks linked to weekly content | Aiming high Numeracy Creativity Literacy Independence Listening Communication Presenting Teamwork Problem solving Staying positive Leadership Epidemiologist https://www.unifrog.org/student/careers/school-subjects/epidemiologist |
| Spring 2 6 weeks | Unit 4: Probability 3. Experimental and theoretical probability <ul style="list-style-type: none"> Likelihood 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 Understand that increasing sample size generally leads to better estimates of probability and population parameters. Use two-way tables, sample space diagrams, tree diagrams and Venn diagrams to represent all the different outcomes possible for at most three events. Independent events Conditional probability Difference in terms of bias | 2 weeks | Tier 3 Experimental probability Theoretical probability Expected frequency Sample space diagram Tree diagram Venn diagram Independent events Conditional probability Homework Dr Frost Maths tasks and written tasks linked to weekly content | Aiming high Numeracy Creativity Literacy Independence Listening Communication Presenting Teamwork Problem solving Staying positive Leadership Credit Risk Analyst https://www.unifrog.org/student/careers/school-subjects/credit-analyst Assessment: Half Term Test - Unit 1 - 4, Mock Exam |
| Summer 1 6 weeks | Unit 5: Further statistics: index numbers and probability distributions 1. Index numbers / weighted index numbers <ul style="list-style-type: none"> Retail price index (RPI) Consumer price index (CPI) Gross domestic product (GDP) Interpret data related to rates of change over time when given in graphical form Calculate and interpret rates of change over time from tables using context specific formula 3. Probability distributions <ul style="list-style-type: none"> Binomial distribution Notation $B(n, p)$ Conditions that make binomial model suitable Mean (np) Calculation of binomial probabilities Normal distribution Notation $N(\mu, \sigma^2)$ Characteristics of Normal distribution Conditions that make Normal model suitable 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) Measures of dispersion <ul style="list-style-type: none"> Standardised scores 2(g) Quality assurance <ul style="list-style-type: none"> Know that a set of sample means are more closely distributed than individual values from the same population. Control charts Use action and warning lines in quality assurance sampling applications. | 6 weeks + revision | Tier 3 Retail price index Consumer price index Gross domestic product Binomial distribution Homework Dr Frost Maths tasks and revision tasks including past papers | Aiming high Numeracy Creativity Literacy Independence Listening Communication Presenting Teamwork Problem solving Staying positive Leadership Financial Adviser https://www.unifrog.org/student/careers/school-subjects/financial-adviser Assessment: Half Term Test - Unit 1 - 4, first half of 5 and mock exam |
| Revision for Paper 1 and Paper 2 | | 3 weeks | Normal distribution Standardised score Quality assurance Control chart Warning limits Action limits Homework Dr Frost Maths tasks and revision tasks including past papers | Aiming high Numeracy Creativity Literacy Independence Listening Communication Presenting Teamwork Problem solving Staying positive Leadership Astronomer https://www.unifrog.org/student/careers/school-subjects.k1/astronomer |