Elements Academy
Building Block 6

Nurturing inclusive learning communities

Statistics

	Higher Content
	Foundation Content

End of year exams!

Revision

Examination

Probability 4: Probability distributions
Discrete Uniform distribution (probability every outcome is the same, estimated mean and median
Binomial distribution- two mutually exclusive outcomes, fixed number of trials
Normal distributions, bell shaped curves, symmetry about mean, understanding in context of standard deviations from mean

Summer 1 + 2

Probability 3 : Tree and Venn Diagrams
Illustrate the outcomes / probabilities of sequential independent/dependent events- Up to three
Conditional Probability
Construct Venn diagrams
Use Venn diagrams to calculate probabilities

Probability 2: Mutually Exclusive and Independent Events
Events which cannot occur at the same time
P(A or B) = P(A ∪ B) = P(A) + P(B)
Exhaustive events
Independence- the outcome of one event doesn't affect the outcome of another
P(A and B) = P(A ∩ B) = P(A) x P(B)
Extend to three events

Probability 1:Odds and Simulation
Relationship between odds and probability
Modelling experiments to estimate probabilities, (random number generating and dice rolling)

Spring 1 + 2

Correlation 4- Non linear data
$Y \propto 1/x$
$Y \propto x^2$
$Y \propto \sqrt{x}$

Correlation 3 – Computation measures
Spearmans rank correlation coefficient (+1 and -1 and meanings)
Product Moment correlation coefficient

Correlation 2- Non linear data
$Y \propto 1/x$
$Y \propto x^2$
$Y \propto \sqrt{x}$

Autumn 1 + 2

Measures of Spread 2-Outliers
Definition and effects on range
Using Given values +/- IQR

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Correlation 1
Scatter Diagrams – lines of best fit passing through mean
Interpolation and extrapolation and calculating the equation
Types of correlation, casuality and spurious correlation.

Measures of Spread 3- Variance and Standard Deviation
Of a discrete set of scores
Of a discrete frequency distribution
Normal distribution – 2 SD of mean from 99% is within 3 SD
Standardised scores to compare sets of data.

Measures of Spread 1- Quartiles and IQR
Upper and Lower Quartile and Interquartile ranges
Deciles and Percentiles- calculating ranges- including correct notation

Summer 1 + 2

Measures of Location 3- Time Series
Moving averages
Trend Lines
Seasonal fluctuations long term trends
Average seasonal variation

Measures of Location 2 – Population statistics
Population Averages
Crude Birth and Death Rates

Measures of Location- Index Numbers
Simple Index numbers- calculating new price, price in base year,
Chain base numbers
Weighted Index numbers

Spring 1 + 2

Graphs 1 –Simple Graphs
Multiple and Composite Bar charts
Chloropleth Maps
Population Pyramids
Comparative pie charts

Graphs 2 –Cumulative Frequency and Box plots
Calculate Cumulative frequency values
Draw Cumulative frequency graphs
Estimate values from graphs
Calculate LQ, UQ, median and IQR
Draw box plots to compare distributions
Cumulative frequency stepped pyramids
Comparative pie charts

Graphs 3 –Shapes pf distributions
Symmetrical
Positively and negatively skewed
Normal distributions

Data Collection 3-Quality Asurance

Data Collection 2-Collecting data
Population and Census v sample and sampling
Survey Methods
Sampling frame and sampling methods (Random, stratified, systematic, Cluster, Quota and Convenience)
Pilot Surveys and Questionnaires
Explanatory and response variables

Data Collection 1-Types of Data
Primary and Secondary Data
Qualititive and Quantative
Discrete and Continuous
Raw
Catergorical
Grouped/ ungrouped
Bi/multivariate

Understanding Data
Introduction to Data handling cycle
Ethics behind data collection
Understanding of how data can be manipulated
Need for hypothesis
Understand contsraints and how to mitigate them.

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welcome

Autumn 1 + 2