The Sutton Academy

Knowledge Rich Curriculum Plan

Year 10 Higher+ Data and Statistics

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Steps to Success	Prior Knowledge: *In order to know this…*	Feedback
To learn how to take a stratified sample and solve capture-recapture problems	• Students will know how to select a stratified sample • Students will know how to estimate answers to capture recapture problems using equivalent fractions	**Stratified** – formed or arranged into strata or layers. **Sample** – a small part or quantity intended to show what the whole is like. **Stratified Sample** – a sample that is drawn from separate groups of the population, rather than at random from the whole population, in order to ensure that the sample is representative **Bias** –prejudice for or against one person or group, especially in a way considered to be unfair. **Population** – In statistics, a population is a set of similar items or events for a question or experiment	•	• Students will need to know how to find equivalent fractions • Students will need to know how to express one amount as a fraction of another	
To learn how to solve problems involving the mean	• Students will know how to work backwards from the mean to solve problems involving finding the mean for a group within a group or for a whole group from two smaller sub-groups	**Average –** a number expressing the central or typical value in a set of data, in particular the mode, median, or (most commonly) the mean **Mean –** a mathematical average calculated by adding up all of the data and dividing it by the number of pieces of data	•	• Students will need to know how to calculate the mean for discrete data	
To learn how to calculate averages from frequency tables	• Students will know how to find the mean from a frequency table • Students will know how to find the median from a frequency table • Students will know how to find the mode from a frequency table • Students will know how to calculate the mean for a grouped frequency table • Students will know how to identify the modal class from a grouped frequency table.	**Median** – the middle piece of data when the data is ordered from smallest to largest **Mode –** the value that occurs most often in the data. There may be no mode, or the data may be multi-modal **Range –** the difference between the largest and smallest values. This isn't	•	• Students will need to know how to calculate the median, mode and range for discrete data • Students will need to know how to interpret a frequency table	

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Steps to Success	Prior Knowledge: *In order to know this…*	Feedback
	• Students will know how to find where the median lies in a grouped frequency table. They will know that to find the position of the median they add one to the total frequency and divide by two. They will understand why they must add one.	actually an average – but tells us how spread out the data is **Interval –** in maths, an interval is a set of real numbers between two given numbers called the endpoints of the interval			
To learn how to draw and interpret pie charts	• Students will know how to accurately draw a pie chart • Students will know how to interpret a pie chart • Students will know how to solve more complex problems involving pie charts	**Pie Chart –** a circular diagram which is divided into slices to illustrate numerical proportion **Sector –** a pie-shaped part of a circle made of the arc along with its two radii	•	• Students will need to know how to draw and measure angles • Students will need to know that there are 360° around a point	
To learn how to draw box plots	• Students will know that a box plot is a graph that presents information from a five-number summary (least value, lower quartile, median, upper quartile, highest value). • Students will know how to draw a box plot from a given median, upper quartile, lower quartile, minimum value and maximum value for a data set • Students will know how to determine the median, upper quartile, lower quartile, minimum value and maximum value for a data set • Students will know how to draw a box plot by first working out the median, upper quartile, lower quartile, minimum value and maximum value for a data set • Students will know how to draw a box plot from information where the interquartile range and either the UQ or LQ or given, or when given the range and either the minimum or maximum value is given	**Box Plot –** a statistical diagram used for graphically demonstrating the locality, spread and skewness groups of numerical data **Median –** the middle piece of data when the data is ordered from smallest to largest **Lower Quartile –** the median of the lower half of a data set. **Upper Quartile –** the median of the upper half of a data set. **Range –** the difference between the largest value in the data set and the smallest value in the data set **Interquartile Range** – the difference between the upper quartile and the lower quartile	•	• Students will need to be able to calculate the median for data in a list • Students will need to know how to calculate the range for a data set	

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Steps to Success	Prior Knowledge: *In order to know this…*	Feedback
To learn how to interpret and compare box plots	• Students will know that each section of a box plot represents 25% of the data • Students will know how to interpret a box plot. • Students will know how to compare box plots. They will know that to do this they must compare the medians and either the range or interquartile range, giving their comparisons in the context of the question		•	• Students will need to be able to calculate the median for data in a list • Students will need to know how to calculate the range for a data set	
To learn how to draw and interpret cumulative frequency curves	• Students will know how to draw a cumulative frequency table given the cumulative frequency • Students will know how to calculate cumulative frequency and draw the resulting curve • Students will know how to estimate values from a cumulative frequency curve • Students will know how to estimate the median, quartiles and interquartile range from a cumulative frequency curve	**Cumulative** - increasing or increased in quantity or degree by successive additions	•	• Students will need to know how to estimate values from a graph	
To learn how to solve problems involving cumulative frequency and box plots	• Students will know how to construct a box plot from their cumulative frequency curve • Students will know how to solve problems involving cumulative frequency curves and box plots		•	• Students will need to know how to interpret a cumulative frequency curve • Students will need to know how to draw a box plot	
To learn how to draw histograms	• Students will know that histograms show frequency density • Students will know that $frequency\ density = \frac{frequency}{class\ width}$ • Students will know how to draw a histogram for grouped data	**Histogram** – a graphical representation of discrete or continuous data where the area of a bar in a histogram is equal to the frequency **Frequency Density –** the frequency per unit for the data in each class	•	• Students will need to know how to draw a bar chart	

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Steps to Success	Prior Knowledge: *In order to know this…*	Feedback
To learn how to interpret histograms	• Students will know how to calculate frequency from a histogram and complete a grouped frequency table from a histogram. • Students will know how to complete a partial histogram given a partially completed frequency table and vice versa • Students will know how to estimate how many students are above/below/between values within a group/groups • Students will know how to solve exam style problems involving histograms • Students will know how to estimate the mean from a histogram with unequal class width. • Students will know how to identify the interval in which a median lies for a histogram.		•	• Students will need to know how to calculate the median from a table • Students will need to know how to draw a histogram	