Knowledge Rich Curriculum Plan

Year 10 Foundation – Data and Statistics

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this…*	Assessment
To learn how to calculate the mean, median, mode and range for discrete data	• Students will know how to calculate the mean, median, mode and range for a list of numbers • Students will know how to compare two sets of data using the mean, median mode and range. • Students will know the advantages and disadvantages of different measures of average.	**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 –** the mathematical average of the set of two or more data values. It is calculated by adding up all of the data and dividing it by the number of pieces of data **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. If no number in the list is repeated, then there is no mode for the list. If there is more than one it is considered to be multi-modal **Range –** the difference between the largest and smallest values. This isn't actually an average – instead it tells us how spread out the data is	• Students will need to know how to order integers and decimals. • Students will need to know how to add and divide using mental calculations.	
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	**Mean –** the mathematical average of the set of two or more data values. It is 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 calculate the mean from a frequency table • Students will know how to calculate 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 range from a frequency table	**Mean –** the mathematical average of the set of two or more data values. It is calculated by adding up all of the data and dividing it by the number of pieces of data **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. If no number in the list is repeated, then there is no mode for the list. If there is more than one it is considered to be multi-modal **Range –** the difference between the largest and smallest values. This isn't actually an average – instead it tells us how spread out the data is	• 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	
To learn how to calculate averages from grouped frequency tables	• 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. • Students will know how to find where the median lies in a grouped frequency table.	**Interval –** in maths, an interval is a set of real numbers between two given numbers called the endpoints of the interval **Mean –** the mathematical average of the set of two or more data values. It is 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 and median and identify the mode for a non-grouped frequency table	

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		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. If no number in the list is repeated, then there is no mode for the list. If there is more than one it is considered to be multi-modal		
To learn how to draw and interpret bar charts	• Students will know how to draw and interpret bar charts • Students will know how to recognise misleading bar charts • Students will know how to draw composite bar charts		• Students should already know how to interpret bar charts	
To learn how to draw and interpret pictograms	• Students will know that a pictogram is a chart that uses pictures to represent data. • Students will know how to produce and interpret pictograms.	Pictogram – a chart that uses pictures to represent data.	• Students should already know how to complete and use tally charts	
To learn how to draw and interpret stem and leaf diagrams	• Students will know that we use stem and leaf diagrams to group all the data in to categories whilst still showing each individual result. • Students will know how to produce stem and leaf diagrams. • Students will know how to produce back to back stem and leaf diagrams. • Students will know how to interpret stem and leaf diagrams. • Students will know how to find the median, mode and range from stem and leaf diagrams. • Students will know how to compare the median, mode and range for data represented in back to back stem and leaf diagrams.	Stem and Leaf Diagram – a diagram where each data value is split into a "leaf" (usually the last digit) and a "stem" (the other digits)	• Students will need to know how to calculate averages and range	
To learn how to draw and interpret pie charts	• Students will know how to accurately draw a pie chart • Students will know how to solve more complex problems involving pie charts • 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 angles • Students will need to know how to measure angles	

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To learn how to plot points and interpret scatter graphs	• Students will know how to plot points on a scatter graph • Students will know how to interpret scatter graphs in terms of the relationship between two variables. • Students will know how to identify outliers on scatter graphs and give reasons why there may be an outlier • Students will know how to draw the line of best fit on a scatter graph • Students will know how to use a line of best fit to make predictions; interpolate and extrapolate apparent trends whilst knowing the dangers of doing so. • Students will know that correlation is a mutual relationship or connection between two or more things. • Students will know how to distinguish between positive, negative and no correlation using lines of best fit and interpret correlation in terms of the problem. • Students will know that correlation does not imply causality. • Students will appreciate that correlation is a measure of the strength of the association of the two variables and that zero correlation does not necessarily imply no relationship but simply no linear correlation. • Students will know how to state how reliable their predictions are, ie. Not reliable if extrapolated.	Scatter Graph – a type of mathematical diagram using coordinates to display values for two variables Outlier – a person or thing differing from all other members of a particular group or set	• Students will need to know how to plot coordinates on a graph	
To learn how to draw and interpret frequency polygons	• Students will know how to draw and interpret a frequency polygon	Frequency Polygon – a line graph of class frequency plotted against class midpoint	• Students will need to know how to plot coordinates • Students will need to know how to calculate averages	