Knowledge Rich Curriculum Plan

Year 11 Foundation – Data and Statistics

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this, students need to already know that…*	Assessment
To learn how to take an accurate sample	• Students will know why it is important to ensure that a sample is representative. They will understand how taking a non-representative sample can lead to bias. • Students will know how to select a stratified sample.	**Population** - All the inhabitants of a particular place. **Sample** - A small part or quantity intended to show what the whole is like. **Bias** - Inclination or prejudice for or against one person or group, especially in a way considered to be unfair. **Strata** - a group that members of a population are divided into	• 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 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 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. There may be no mode or the data may be multi-modal **Range** – the difference between the largest and smallest values. This isn't actually an average – but 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 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 • Students will know how to calculate the mean for a grouped frequency table •	**Mean** – the mathematical average 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. There may be no mode or the data may 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 **Interval** – in maths, an interval is a set of real numbers between two given numbers called the endpoints of the interval	• 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 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 scales	

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this, students need to already know that…*	Assessment
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 • Students will need to know how to order integers and decimals	
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 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 Correlation – a mutual relationship or connection between two or more things.	• Students will need to know how to plot coordinates on a graph	

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this, students need to already know that…*	Assessment
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	