The Sutton Academy

Knowledge Rich Curriculum Plan

Year 9 Support – Data and Statistics 1

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 calculate speed, distance and time.	• Students will know that $Speed = \frac{distance}{time}$ • Students will know that $Time = \frac{distance}{speed}$ • Students will know that $Distance = Speed \times Time$ • Students will know how to make simple conversions for minutes to decimal hours - they will know that 30 minutes is 0.5 hours and 15 minutes is 0.25 hours. **Opportunity for challenge:** • Students will know how to calculate speed, distance or time given the two other variables including where the time needs to be converted into a decimal number of minutes or hours.	Speed – the rate at which someone or something moves or operates or is able to move or operate.	• Students need to know how to convert time between minutes and hours.	Mini-Assessment 12
To learn how to interpret real-life graphs.	• Students will know how to use conversion graphs to do simple conversions with currency. • Students will know how to use conversion graphs to do simple conversions with metric and imperial units. • Students will know how to use conversion graphs to carry out conversions that involve scaling up. • Students will know how to use linear graphs to in order to explore the relationships between costs and variables. • Students will know how to use linear graphs involving money to state a fixed cost. **Opportunity for challenge:** • Students will know how to draw a conversion graph.			Mini-Assessment 12
To learn how to interpret a distance-time graph.	• Students will know how to make simple interpretations from a distance-time graph. • Students will know how to find distances and times from a distance-time graph. • Students will know how to complete a distance-time graph from a worded scenario. • Students will know how to draw a complete distance-time graph from a worded scenario. **Opportunity for challenge:** • Students will know how to interpret the speed within each section of the graph by looking at the steepness of the line.		• Students need to know how to find the difference between two times	Mini-Assessment 12
To learn how to find the averages and range from a list of data values.	• Students will know that the mode is the value that appears most often in a set of data values. • Students will know how to find the mode from a set of data values. • Students will know that there can be two modes. • Students will know that there can be no mode. (Please emphasize that they need to state it has no mode rather than use 0) • Students will know that the median is the middle value from an ordered list of numbers. • Students will know how to find the median from an odd amount of data values. • Students will know how to find the median from an even amount of data values. • Students will know that the range of a set of data is the difference between the largest and smallest values. • Students will know that the range measures the spread of the data. • Students will know that the mean is the average of a set of numbers. • Students will know that to find the mean of a data set, they must find the sum the numbers in the set and then divide that total by the number of numbers in the set. • Students will know how to make basic comparisons between averages or range. **Opportunity for challenge:**	Average – a number expressing the central or typical value in a set of data, in particular the mode, median, or (most commonly) the mean 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 Median – the middle piece of data when the data is ordered from smallest to largest 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. Range – the difference between the largest and smallest values. This isn't	• Students will know how to identify and categorise data as qualitative and quantitative • Students will know how to identify and categorise data as discrete and continuous	Mini-Assessment 12

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	• Students will know how to recognise the advantages and disadvantages between measures of average.	actually an average – instead it tells us how spread out the data is.		
To learn how to find the averages and range from frequency tables.	• Students will know how to find the mode from a frequency table by finding the data value which corresponds to the highest frequency. • Students will know how to find the median from a frequency table by finding the data value which corresponds to the middle frequency value. • Students will know how to find the mean of a frequency table by finding the sum of the products of each data value and the corresponding frequency and then dividing this by the total frequency. • Students will know how to find the range from a frequency table by finding the difference between the highest and lowest data value. **Opportunity for challenge:** • Students will know how to find missing data within a frequency table using the averages and range.		• Students will know how to find the averages and range from a list of data values.	Mini-Assessment 12
To learn how to find the averages from grouped frequency tables.	• Students will know that a grouped frequency table represents data that falls within class intervals. • Students will know that the actual data values are unknown. • Students will know how to find the modal class from a grouped frequency table by finding the class interval which corresponds to the highest frequency. • Students will know how to find the median class from a grouped frequency table by finding the class interval which corresponds to the middle frequency value. • Students will know how to find an estimate for the mean from a grouped frequency table by finding the sum of the products of each mid-point of the class interval and the corresponding frequency and then dividing this by the total frequency. • Students will know that the mean is an estimate because the data values are unknown. • Students will know that by using the mid-points to find the mean you are assuming that the data is equally spread out within each interval. **Opportunity for challenge:** • Students will know how to find missing data within a grouped frequency table using the averages.		• Students will know how to find the averages from frequency tables.	Mini-Assessment 12
To learn how to draw and interpret bar charts.	• Students will know that a bar chart is a diagram in which the numerical values of variables are represented by the height of bars of equal width. • Students will know that bar charts are used to represent data to make it easy to read and compare. • Students will know that we can only compare bars within the same scale. • Students will know how to draw, label and scale axes. • Students will know how to draw bar charts for discrete data. • Students will know how to construct a bar chart from information given in a tally chart. • Students will know how to use a tally chart to draw a bar charts which involves continuous data. • Students will know how to read frequency values from a bar chart. • Students will know how to recognise simple patterns, characteristics and relationships in bar charts.	**Tally Chart –** a simple way of recording and counting frequencies. Each occurrence is shown by a tally mark and every fifth tally is drawn diagonally to make a "gate" of five **Bar Chart –** a diagram in which the numerical values of variables are represented by the height or length of lines or rectangles of equal width	• Students need to know how to sequence numbers in a pattern. • Students need to know that qualitative data is data with non-numerical data. • Students need to know that discrete data is data that can only take certain numerical values. • Students need to know that continuous data is data that can take any value within a given range. • Students need to know how to complete a tally chart.	Mini-Assessment 12

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	• Students will know how to calculate total population from a bar chart or table. • Students will know how to find the greatest and least values from a bar chart. • Students will know how to compare data within a bar chart. • Students will know how to compare two different bar charts. **Opportunity for challenge:** • Students will know how to recognise misleading bar charts and explain how it is misleading.			