



The Sutton Academy

# Knowledge Rich Curriculum Plan

Year 8 Support – Data and Statistics 1

| Lesson/Learning Sequence                                | Intended Knowledge:<br><i>Students will know that...</i>   | Tiered Vocabulary  | Prior Knowledge:<br><i>In order to know this, students need to already know that...</i>  | Assessment         |
|---|--|--|--|--------------------|
| <b>To learn how to convert time.</b>                    | <ul style="list-style-type: none"> <li>• Students will know that there are 60 seconds in a minute, 60 minutes in an hour and 24 hours in a day.</li> <li>• Students will know that there are 7 days in a week.</li> <li>• Students will know how many days are in each month.</li> <li>• Students will know that there are 12 months in a year,</li> <li>• Students will know that there are 365 days in a standard year and 366 days in a leap year.</li> <li>• Students will know how to convert between the 12 hour and 24-hour clock.</li> <li>• Students will know how to carry out simple conversions between minutes and hours without a calculator.</li> <li>• Students will know how to carry out conversions between minutes and hours with a calculator.</li> </ul> <p><b>Opportunity for challenge:</b></p> <ul style="list-style-type: none"> <li>• Students will know how to carry out more complex conversions between minutes and hours without a calculator.</li> </ul> | <p><b>Analogue clock</b> – a clock or watch that has moving hands and (usually) hours marked from 1 to 12 to show you the time</p>   | <ul style="list-style-type: none"> <li>• Students will know how to read and represent time on a digital clock.</li> <li>• Students will know how to read and represent time on an analogue clock.</li> </ul> | Mini-Assessment 12 |
| <b>To learn how to interpret real-life graphs.</b>      | <ul style="list-style-type: none"> <li>• Students will know how to use conversion graphs to do simple conversions with currency.</li> <li>• Students will know how to use conversion graphs to do simple conversions with metric and imperial units.</li> <li>• Students will know how to use conversion graphs to carry out conversions that involve scaling up.</li> </ul> <p><b>Opportunity for challenge:</b></p> <ul style="list-style-type: none"> <li>• Students will know how to use linear graphs to in order to explore the relationships between costs and variables.</li> <li>• Students will know how to use linear graphs involving money to state a fixed cost.</li> </ul>  |  |  | Mini-Assessment 12 |
| <b>To learn how to interpret a distance-time graph.</b> | <ul style="list-style-type: none"> <li>• Students will know how to make simple interpretations from a distance-time graph.</li> <li>• Students will know how to find distances and times from a distance-time graph.</li> <li>• Students will know how to complete a distance-time graph from a worded scenario.</li> </ul> <p><b>Opportunity for challenge:</b></p> <ul style="list-style-type: none"> <li>• Students will know how to draw a complete distance-time graph from a worded scenario.</li> </ul>   |  | <ul style="list-style-type: none"> <li>• Students need to know how to find the difference between two times</li> </ul>   | Mini-Assessment 12 |
| <b>To learn about different types of data.</b>          | <ul style="list-style-type: none"> <li>• Students will know how to identify and categorise data as qualitative and quantitative</li> <li>• Students will know how to identify and categorise data as discrete and continuous</li> <li>• Students will know that some sources of data may be biased and how bias occurs.</li> </ul> <p><b>The tier 2 and tier 3 vocabulary should be introduced through extended reading</b></p>  | <p><b>Sample</b> – a small part or quantity intended to represent the whole population.</p> <p><b>Continuous data</b> – data that can take any value within a given range. For example, height, time, weight, temperature and length.</p> <p><b>Population</b> – all the inhabitants of a particular place<br/>In statistics, a population is a set of similar items or events which is of interest for a question or experiment</p> <p><b>Discrete data</b> – data that can only take certain numerical values. For example, shoe size, number of people and number of cars</p> <p><b>Qualitative Data</b> – non-numerical data.</p> <p><b>Quantitative Data</b> – numerical data</p> |  | Mini-Assessment 12 |

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|--|--|--|---|---------------------------|
|  |  | <p><b>Bias</b> – inclination or prejudice for or against one person or group, especially in a way considered to be unfair.</p>   |   |                           |
| <p><b>To learn how to find the mode and median from a list of data values.</b></p> | <ul style="list-style-type: none"> <li>• Students will know that the mode is the value that appears most often in a set of data values.</li> <li>• Students will know how to find the mode from a set of data values.</li> <li>• Students will know that there can be two modes.</li> <li>• Students will know that there can be no mode. (Please emphasize that they need to state it has no mode rather than use 0)</li> <li>• Students will know that the median is the middle value from an ordered list of numbers.</li> <li>• Students will know how to find the median from an odd amount of data values.</li> <li>• Students will know how to find the median from an even amount of data values.</li> </ul>   | <p><b>Mode</b> – 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</p> <p><b>Median</b> – the middle piece of data when the data is ordered from smallest to largest</p>  | <ul style="list-style-type: none"> <li>• Students need to know how to order integers.</li> </ul>                              | <p>Mini-Assessment 12</p> |
| <p><b>To learn how to find the mean and range from a list of data values.</b></p>  | <ul style="list-style-type: none"> <li>• Students will know that the range of a set of data is the difference between the largest and smallest values.</li> <li>• Students will know that the range measures the spread of the data.</li> <li>• Students will know that the mean is the average of a set of numbers.</li> <li>• 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.</li> </ul> <p><b>Opportunity for challenge:</b></p> <ul style="list-style-type: none"> <li>• Students will know how to make basic comparisons between averages or range.</li> </ul>  | <p><b>Mean</b> – 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.</p> <p><b>Range</b> – the difference between the largest and smallest values. This isn't actually an average – instead it tells us how spread out the data is.</p>       | <ul style="list-style-type: none"> <li>• Students need to know how to add, subtract and divide integers.</li> </ul>           | <p>Mini-Assessment 12</p> |
| <p><b>To learn how to draw bar charts.</b></p>                                     | <ul style="list-style-type: none"> <li>• Students will know how to complete a frequency table for discrete data.</li> <li>• Students will know how to calculate the total frequency from a frequency table.</li> <li>• Students will know how to read off frequency values from a frequency table.</li> <li>• 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.</li> <li>• Students will know that bar charts are used to represent data to make it easy to read and compare.</li> <li>• Students will know that we can only compare bars within the same scale.</li> <li>• Students will know how to draw, label and scale axes.</li> <li>• Students will know how to draw bar charts for discrete data.</li> <li>• Students will know how to construct a bar chart from information given in a tally chart.</li> <li>• Students will know how to plan their own investigation involving collecting data in a tally chart and then representing the data in a bar chart.</li> </ul> <p><b>Opportunities for challenge:</b></p> <ul style="list-style-type: none"> <li>• Students will know how to use a tally chart to draw a bar charts which involves continuous data.</li> </ul> | <p><b>Tally Chart</b> – 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</p> <p><b>Bar Chart</b> – a diagram in which the numerical values of variables are represented by the height or length of lines or rectangles of equal width</p> | <ul style="list-style-type: none"> <li>• Students should already know how to complete and interpret a tally chart.</li> </ul> | <p>Mini-Assessment 12</p> |

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|---|--|-------------------|--|---------------------------|
| <p><b>To learn how to interpret bar charts.</b></p> | <ul style="list-style-type: none"> <li>• Students will know how to read frequency values from a bar chart.</li> <li>• Students will know how to recognise simple patterns, characteristics and relationships in bar charts.</li> <li>• Students will know how to calculate total population from a bar chart or table.</li> <li>• Students will know how to find the greatest and least values from a bar chart.</li> <li>• Students will know how to compare data within a bar chart.</li> </ul> <p><b>Opportunity for challenge:</b></p> <ul style="list-style-type: none"> <li>• Students will know how to compare two different bar charts.</li> </ul> |                   | <ul style="list-style-type: none"> <li>• Students need to know how to draw a bar chart.</li> </ul> | <p>Mini-Assessment 12</p> |