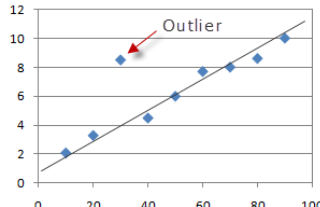
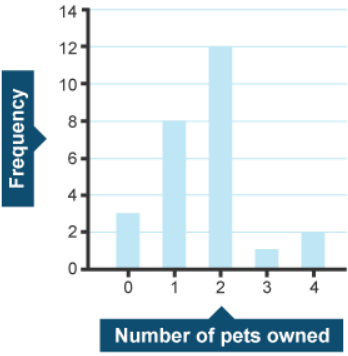
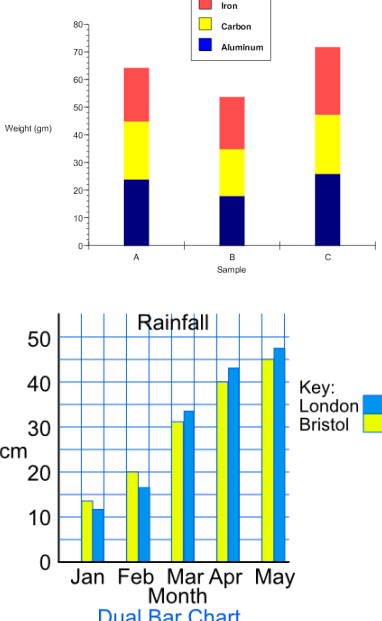
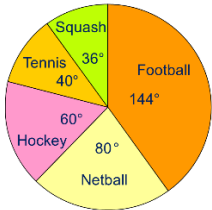
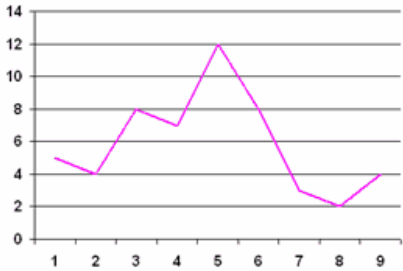
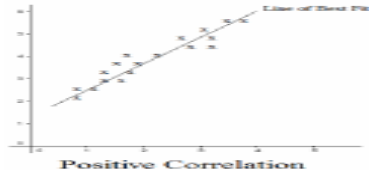
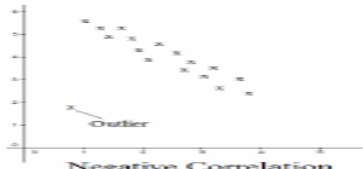
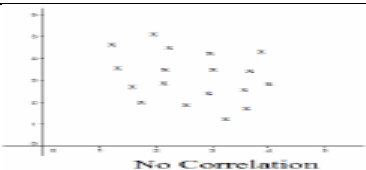
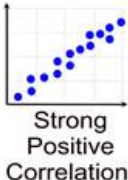
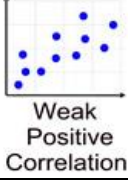
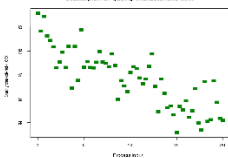
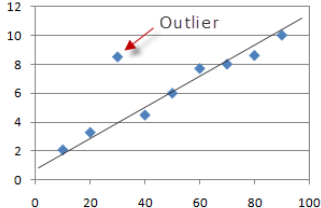


Topic: Data Handling

Topic/Skill	Definition/Tips	Example																					
Types of Data	Qualitative Data – non-numerical data Quantitative Data – numerical data Continuous Data – data that can take any numerical value within a given range. Discrete Data – data that can take only specific values within a given range.	Qualitative Data – eye colour, gender etc. Continuous Data – weight, voltage etc. Discrete Data – number of children, shoe size etc.																					
Mean	Add up the values and divide by how many values there are.	The mean of 3, 4, 7, 6, 0, 4, 6 is $\frac{3 + 4 + 7 + 6 + 0 + 4 + 6}{7} = 5$																					
Mean from a Table	1. Find the midpoints (if necessary) 2. Multiply Frequency by values or midpoints 3. Add up these values 4. Divide this total by the Total Frequency If grouped data is used, the answer will be an estimate .	<table border="1"><thead><tr><th>Height in cm</th><th>Frequency</th><th>Midpoint</th><th>F × M</th></tr></thead><tbody><tr><td>$0 < h \leq 10$</td><td>8</td><td>5</td><td>$8 \times 5 = 40$</td></tr><tr><td>$10 < h \leq 30$</td><td>10</td><td>20</td><td>$10 \times 20 = 200$</td></tr><tr><td>$30 < h \leq 40$</td><td>6</td><td>35</td><td>$6 \times 35 = 210$</td></tr><tr><td>Total</td><td>24</td><td>Ignore!</td><td>450</td></tr></tbody></table> Estimated Mean height: $450 \div 24 = 18.75\text{cm}$	Height in cm	Frequency	Midpoint	F × M	$0 < h \leq 10$	8	5	$8 \times 5 = 40$	$10 < h \leq 30$	10	20	$10 \times 20 = 200$	$30 < h \leq 40$	6	35	$6 \times 35 = 210$	Total	24	Ignore!	450	
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Median Value	The middle value. Put the data in order and find the middle one. If there are two middle values , find the number half way between them by adding them together and dividing by 2 .	Find the median of: 4, 5, 2, 3, 6, 7, 6 Ordered: 2, 3, 4, 5 , 6, 6, 7 Median = 5																					
Median from a Table	Use the formula $\frac{(n+1)}{2}$ to find the position of the median. n is the total frequency.	If the total frequency is 15, the median will be the $\left(\frac{15+1}{2}\right) = 8\text{th}$ position																					
Mode/Modal Value	Most frequent/common. Can have more than one mode (called bi-modal or multi-modal) or no mode (if all values appear once)	Find the mode: 4, 5, 2, 3, 6, 4, 7, 8, 4 Mode = 4																					
Range	Highest value subtract the Smallest value Range is a ‘measure of spread’. The smaller the range the more <u>consistent</u> the data.	Find the range: 3, 31, 26, 102, 37, 97. Range = $102 - 3 = 99$																					
Outlier	A value that ‘ lies outside ’ most of the other values in a set of data. An outlier is much smaller or much larger than the other values in a set of data.																						
Frequency Table	A record of how often each value in a set of data occurs .	<table border="1"><thead><tr><th>Number of marks</th><th>Tally marks</th><th>Frequency</th></tr></thead><tbody><tr><td>1</td><td> </td><td>7</td></tr><tr><td>2</td><td> </td><td>5</td></tr><tr><td>3</td><td> </td><td>6</td></tr><tr><td>4</td><td> </td><td>5</td></tr><tr><td>5</td><td> </td><td>3</td></tr><tr><td>Total</td><td></td><td>26</td></tr></tbody></table>	Number of marks	Tally marks	Frequency	1		7	2		5	3		6	4		5	5		3	Total		26
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Bar Chart	Represents data as vertical blocks. x-axis shows the type of data y-axis shows the frequency for each type of data Each bar should be the same width There should be gaps between each bar Remember to label each axis.	
Types of Bar Chart	Compound/Composite Bar Charts show data stacked on top of each other. Comparative/Dual Bar Charts show data side by side.	
Pie Chart	Used for showing how data breaks down into its constituent parts. When drawing a pie chart, divide 360° by the total frequency. This will tell you how many degrees to use for the frequency of each category. Remember to label the category that each sector in the pie chart represents.	 If there are 40 people in a survey, then each person will be worth $360 \div 40 = 9^\circ$ of the pie chart.
Pictogram	Uses pictures or symbols to show the value of the data. A pictogram must have a key.	Black    Red    Green  Others      = 4 cars

Line Graph	A graph that uses points connected by straight lines to show how data changes in values. This can be used for time series data, which is a series of data points spaced over uniform time intervals in time order.	
Correlation	Correlation between two sets of data means they are connected in some way.	There is correlation between temperature and the number of ice creams sold.
Causality	When one variable influences another variable.	The more hours you work at a particular job (paid hourly), the higher your income from that job will be.
Positive Correlation	As one value increases the other value increases .	
Negative Correlation	As one value increases the other value decreases .	
No Correlation	There is no linear relationship between the two.	
Strong Correlation	When two sets of data are closely linked .	
Weak Correlation	When two sets of data have correlation, but are not closely linked .	
Scatter Graph	A graph in which values of two variables are plotted along two axes to compare them and see if there is any connection between them.	
Line of Best Fit	A straight line that best represents the data on a scatter graph.	

Outlier	A value that 'lies outside' most of the other values in a set of data. An outlier is much smaller or much larger than the other values in a set of data.	
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Where else is the Data Handling topic used: Graphs Probability Ratio and proportion	Links to other subjects: Sciences (Physics, Biology and Chemistry) Humanities (Geography and History)
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