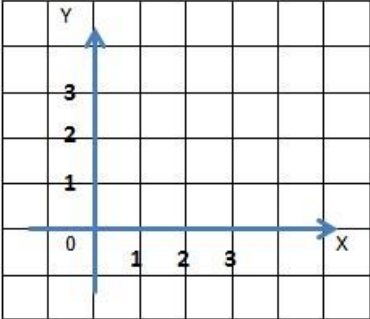


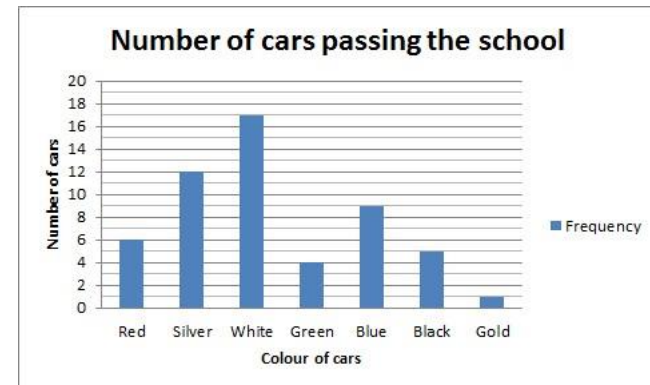
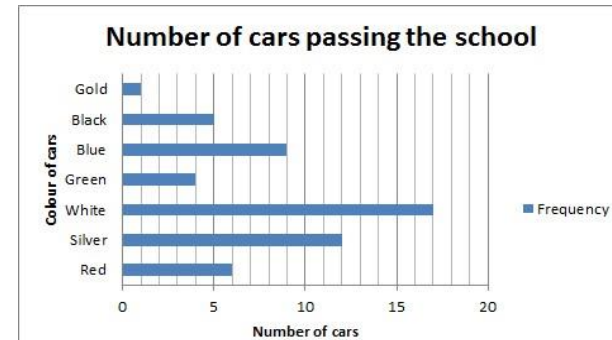
Data and analysis

Term	Definition	Illustration
Analysis of data	To make statements about a set of data based on interpretation of the results.	
Average	The average is known as the number typical of a set of numbers. It is also typically used as another term for the mean.	
Axis	A fixed, reference line from which locations, distances or angles are taken. Usually grids have an x axis and y axis	

Data and analysis

Bar chart / Bar graph

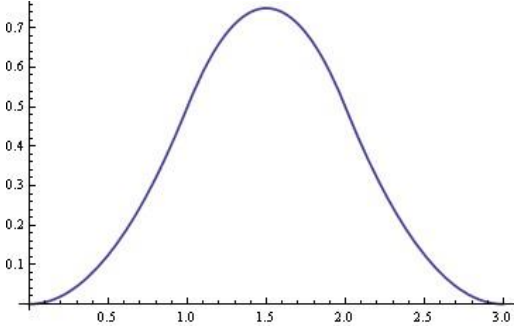
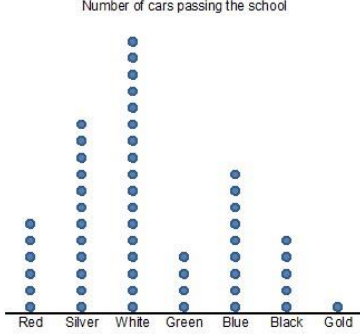
A bar graph (also bar chart) is a graphical display of data using bars of different heights. They can also be displayed horizontally.



Data and analysis

<p>Bias</p>	<p>A 'false' or 'invalid' result e.g. when collecting data on Scottish people's favourite supermarket, it would be biased if you conducted the research outside one certain supermarket as it could possibly encourage people to say the one they have just been in to.</p> <p>A systematic built-in error which makes all values wrong by a certain amount, e.g. Always measuring own height wearing shoes with thick soles.</p>										
<p>Carroll diagram</p>	<p>A two way table used for grouping items according to characteristics.</p>	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td style="background-color: #00AEEF; color: white;">Can Fly</td> <td style="background-color: #00AEEF; color: white;">Cannot fly</td> </tr> <tr> <td style="background-color: #00AEEF; color: white; writing-mode: vertical-rl; transform: rotate(180deg);">Mammal</td> <td>Bat</td> <td>Elephant Horse</td> </tr> <tr> <td style="background-color: #00AEEF; color: white; writing-mode: vertical-rl; transform: rotate(180deg);">Bird</td> <td>Pigeon Eagle</td> <td>Ostrich Penguin</td> </tr> </table>		Can Fly	Cannot fly	Mammal	Bat	Elephant Horse	Bird	Pigeon Eagle	Ostrich Penguin
	Can Fly	Cannot fly									
Mammal	Bat	Elephant Horse									
Bird	Pigeon Eagle	Ostrich Penguin									
<p>Census</p>	<p>When data is collected for every member in a group.</p>										
<p>Consequences</p>	<p>The impact a decision can make on subsequent events.</p>										
<p>Continuous data</p>	<p>Continuous data is measured and can be any value within a range <i>e.g. the length of a leaf.</i></p> <p>The time taken to run a race is continuous as all measurements have meaning.</p>										

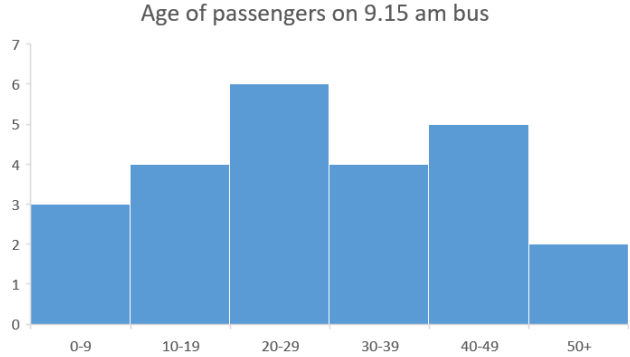
Data and analysis

<p>Data</p>	<p>A collection of facts, such as numbers, words, measurements, observations</p>																	
<p>Discrete data</p>	<p>Discrete data is counted and can only take certain values - like whole numbers <i>e.g. the number of cars passing by a school.</i></p> <p>Shoe size is an example of discrete data as size 6 and 7 have a meaning however size 6.2 does not.</p>																	
<p>Distribution</p>	<p>The distribution is a description of the overall shape of the data when displayed graphically.</p>																	
<p>Dot plots</p>	<p>A graphical display of data using dots.</p>	<p style="text-align: center;">Number of cars passing the school</p>  <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Color</th> <th>Number of cars</th> </tr> </thead> <tbody> <tr> <td>Red</td> <td>4</td> </tr> <tr> <td>Silver</td> <td>8</td> </tr> <tr> <td>White</td> <td>10</td> </tr> <tr> <td>Green</td> <td>3</td> </tr> <tr> <td>Blue</td> <td>6</td> </tr> <tr> <td>Black</td> <td>4</td> </tr> <tr> <td>Gold</td> <td>1</td> </tr> </tbody> </table>	Color	Number of cars	Red	4	Silver	8	White	10	Green	3	Blue	6	Black	4	Gold	1
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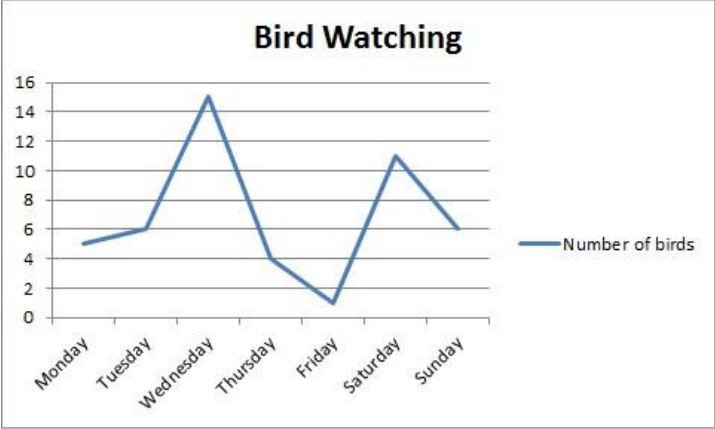
Data and analysis

Draw conclusions	To make statements about a set of data based on results.																												
Event	A single result of an experiment.																												
Frequency table	A table used to note tally marks and show frequencies of each item.	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="3" style="text-align: center;">Number of cars passing the school</th> </tr> <tr> <th style="text-align: left;">Colour</th> <th style="text-align: center;">Tally Marks</th> <th style="text-align: center;">Frequency</th> </tr> </thead> <tbody> <tr> <td>Red</td> <td style="text-align: center;"> I</td> <td style="text-align: center;">6</td> </tr> <tr> <td>Silver</td> <td style="text-align: center;"> </td> <td style="text-align: center;">12</td> </tr> <tr> <td>White</td> <td style="text-align: center;"> </td> <td style="text-align: center;">17</td> </tr> <tr> <td>Green</td> <td style="text-align: center;"> </td> <td style="text-align: center;">4</td> </tr> <tr> <td>Blue</td> <td style="text-align: center;"> </td> <td style="text-align: center;">9</td> </tr> <tr> <td>Black</td> <td style="text-align: center;"> </td> <td style="text-align: center;">5</td> </tr> <tr> <td>Gold</td> <td style="text-align: center;"> </td> <td style="text-align: center;">1</td> </tr> </tbody> </table>	Number of cars passing the school			Colour	Tally Marks	Frequency	Red	I	6	Silver		12	White		17	Green		4	Blue		9	Black		5	Gold		1
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Grouped data	Data is grouped together into intervals. For example: Data sorted into classes e.g. 11-15, 16-20.																												

Data and analysis

Histogram	A graphical display of data using bars of different heights, it is similar to a bar chart but a histogram groups numbers into ranges.	 <p>The histogram displays the number of passengers in different age groups on a 9.15 am bus. The x-axis represents age ranges (0-9, 10-19, 20-29, 30-39, 40-49, 50+) and the y-axis represents the number of passengers (0 to 7). The bars show the following counts: 0-9 (3), 10-19 (4), 20-29 (6), 30-39 (4), 40-49 (5), and 50+ (2).</p> <table border="1"><thead><tr><th>Age Range</th><th>Number of Passengers</th></tr></thead><tbody><tr><td>0-9</td><td>3</td></tr><tr><td>10-19</td><td>4</td></tr><tr><td>20-29</td><td>6</td></tr><tr><td>30-39</td><td>4</td></tr><tr><td>40-49</td><td>5</td></tr><tr><td>50+</td><td>2</td></tr></tbody></table>	Age Range	Number of Passengers	0-9	3	10-19	4	20-29	6	30-39	4	40-49	5	50+	2
Age Range	Number of Passengers															
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Labelling	The labels on a graphical representation which give further information about the data. E.g. if gathering data on minibeasts in the school garden, the y axis would be labelled 'number of minibeasts' and the x axis would be labelled 'types of minibeasts'.															
Least common / least popular	The number or item which appears least often in a set of data.															

Data and analysis

<p>Line Graph</p>	<p>A graph that shows information that is connected in some way – such as change over a period of time</p>	 <table border="1" style="display: none;"> <caption>Bird Watching Data</caption> <thead> <tr> <th>Day</th> <th>Number of birds</th> </tr> </thead> <tbody> <tr> <td>Monday</td> <td>5</td> </tr> <tr> <td>Tuesday</td> <td>6</td> </tr> <tr> <td>Wednesday</td> <td>15</td> </tr> <tr> <td>Thursday</td> <td>4</td> </tr> <tr> <td>Friday</td> <td>1</td> </tr> <tr> <td>Saturday</td> <td>11</td> </tr> <tr> <td>Sunday</td> <td>6</td> </tr> </tbody> </table>	Day	Number of birds	Monday	5	Tuesday	6	Wednesday	15	Thursday	4	Friday	1	Saturday	11	Sunday	6
Day	Number of birds																	
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Thursday	4																	
Friday	1																	
Saturday	11																	
Sunday	6																	
<p>Make predictions</p>	<p>Use data available to suggest what the future may be.</p>																	
<p>Mean</p>	<p>The mean is the average of the set of data – it is the sum of the numbers divided by how many numbers there are. For example in the set of numbers 5, 5, 6, 7, 8, 12, 13, 15 and 16 the mean would be $(5+5+6+7+8+12+13+15+16) / 9 = 87/9 = 9.67$ to 2 d.p.</p>																	
<p>Median</p>	<p>The median is the middle value in a sorted list of numbers. For example in the set of numbers 5, 5, 6, 7, 8, 12, 13, 15 and 16 the median would be 8.</p>																	
<p>Misleading information</p>	<p>Information which has been adapted by either presentation or selection to give the wrong impression of the true data.</p>																	

Data and analysis

<p>Mode</p>	<p>The mode is the number which appears most often in a set of data.</p> <p>For example in the set of numbers 5, 5, 6, 7, 8, 12, 13, 15 and 16 the mode would be 5.</p>																																																																			
<p>Most common/ most popular</p>	<p>The number or item which appears most often in a set of data.</p>																																																																			
<p>Pictogram</p>	<p>A Pictogram or Pictograph is a way of showing data using images.</p>	<table border="1"> <caption>Number of flowers in bloom</caption> <thead> <tr> <th>Description</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> <th>7</th> <th>8</th> <th>9</th> <th>10</th> </tr> </thead> <tbody> <tr> <td>Monday</td> <td></td> <td>●</td> <td>●</td> <td>●</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Tuesday</td> <td></td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Wednesday</td> <td></td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td></td> <td></td> </tr> <tr> <td>Thursday</td> <td></td> <td>●</td> <td>●</td> <td>●</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Friday</td> <td></td> <td>●</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Description	1	2	3	4	5	6	7	8	9	10	Monday		●	●	●							Tuesday		●	●	●	●	●					Wednesday		●	●	●	●	●	●	●			Thursday		●	●	●							Friday		●								
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<p>Pie chart</p>	<p>A chart which uses 'pie slices' to show relative sizes of data.</p> <p>The sections of the chart can be recorded in percentages, e.g. half of the pie represented 50% of the data collected.</p>	<table border="1"> <caption>Number of birds</caption> <thead> <tr> <th>Day</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Monday</td> <td>10%</td> </tr> <tr> <td>Tuesday</td> <td>13%</td> </tr> <tr> <td>Wednesday</td> <td>31%</td> </tr> <tr> <td>Thursday</td> <td>8%</td> </tr> <tr> <td>Friday</td> <td>2%</td> </tr> <tr> <td>Saturday</td> <td>23%</td> </tr> <tr> <td>Sunday</td> <td>13%</td> </tr> </tbody> </table>	Day	Percentage	Monday	10%	Tuesday	13%	Wednesday	31%	Thursday	8%	Friday	2%	Saturday	23%	Sunday	13%																																																		
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<p>Prediction</p>	<p>An educated guess at future events based on past experiences. e.g. predicting the weather in December.</p>																																																																			

Data and analysis

Qualitative (data)	Descriptive information.	
Quantitative (data)	Numerical information.	
Questionnaire	A set of questions used to gather information during a survey.	
Range	<p>The range is the difference between the lowest and highest numbers in the set.</p> <p>For example in the set of numbers 5, 5, 6, 7, 8, 12, 13, 15 and 16 the range would be (highest – lowest) $16 - 5 = 11$.</p>	
Raw data	Raw data is the data collected for example in a survey.	
Robust information	Robust information has been gathered and presented in an appropriate way.	
Sample	A selection taken from a larger group (the "population") so that you can examine it to find out something about the larger group.	
Sample size	<p>The number of pieces of information gathered from the sample in order to represent the whole "population."</p> <p>E.g. 100 men were surveyed to find out how many hours they spent exercising each week. (100 is the sample size out of all men in the world).</p>	
Scale	The intervals that are used on a graphical representation of data e.g. a scale which rises in ones or in tens etc.	

Data and analysis

<p>Stem and leaf plots</p>	<p>A table where each data value is split into a "leaf" (usually the last digit) and a "stem" (the other digits).</p> <p>For example "32" is split into "3" (stem) and "2" (leaf). The "stem" values are listed down, and the "leaf" values are listed next to them.</p>	<p>Data Set: 11, 12, 13, 13, 14, 18, 23, 24, 27, 27, 31, 34, 36, 42</p> <p>Stem and Leaf Plot:</p> <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="border-right: 1px solid black; padding: 2px;">Stem</th> <th style="padding: 2px;">Leaf</th> </tr> </thead> <tbody> <tr> <td style="border-right: 1px solid black; padding: 2px;">1</td> <td style="padding: 2px;">1 2 3 3 4 8</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 2px;">2</td> <td style="padding: 2px;">3 4 7 7</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 2px;">3</td> <td style="padding: 2px;">1 4 6</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 2px;">4</td> <td style="padding: 2px;">2</td> </tr> </tbody> </table> <p style="text-align: right; margin-right: 50px;">Key: 1 2 means 12</p>	Stem	Leaf	1	1 2 3 3 4 8	2	3 4 7 7	3	1 4 6	4	2
Stem	Leaf											
1	1 2 3 3 4 8											
2	3 4 7 7											
3	1 4 6											
4	2											
<p>Survey</p>	<p>Gathering information about a certain topic or issue for a particular reason. The information can help people make decisions about topics of interest e.g. most popular holiday destinations for young families.</p>											
<p>Tally Marks</p>	<p>A visual representation of the number of times an item appears in a set, these are bundled in groups of five. For example: represents 2 and represents 5</p>											
<p>Trends</p>	<p>The overall picture of a set of data over time</p> <p>For example house prices, over time, in the UK have shown an upward trend.</p>											
<p>Vague information</p>	<p>Vague information is information which is presented without using all available information.</p>											
<p>Venn Diagram</p>	<p>A diagram that shows all possible logical relations between a collection of sets of data.</p> <p>For example in this Venn diagram, we can see the common multiples of 3 and 4</p>											