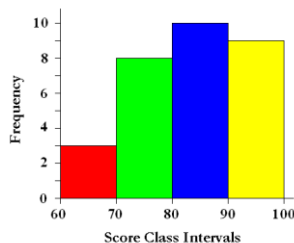
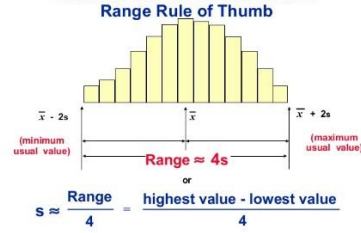
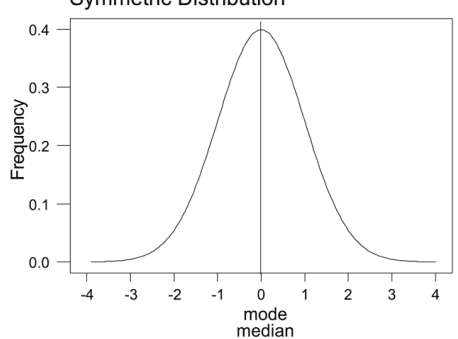


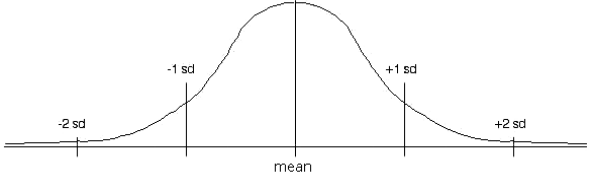
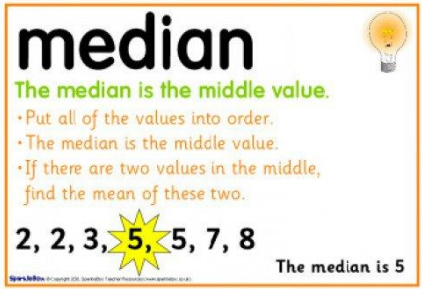
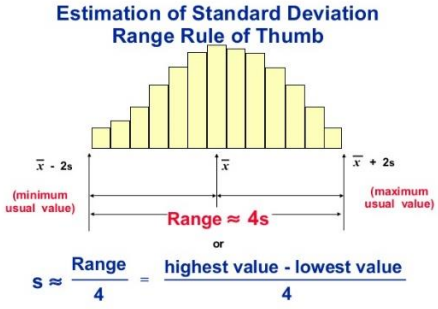
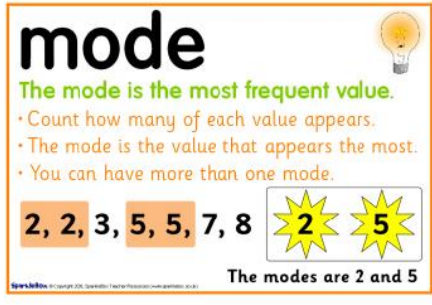
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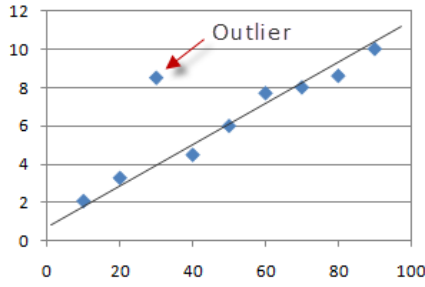
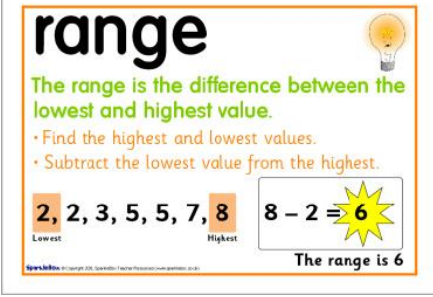
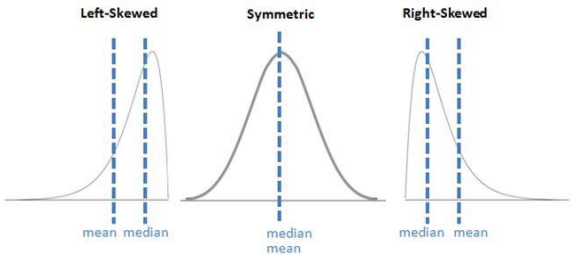
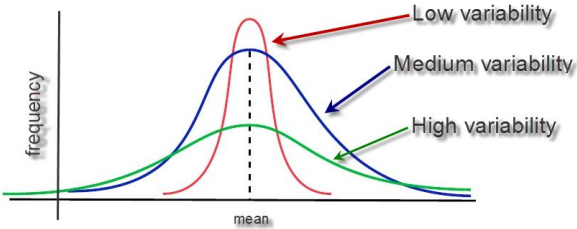


CHART

TERM	INFORMATION	PICTURE
Box and Whisker Plot	A diagram that summarizes data using the median, the upper and lower quartiles, and the extreme values (minimum and maximum). Box and whisker plots are also known as box plots. It is constructed from the five-number summary of the data: Minimum, Q1 (lower quartile), Q2 (median), Q3 (upper quartile), Maximum.	
Distribution	The arrangement of values that show the spread of the data. Probability distribution assigns a probability to each measurable subset of the possible outcomes of a random experiment, survey, or procedure of statistical inference.	
Dot Plot	A statistical chart consisting of data points on a number line, typically using circles.	<p style="text-align: center;">Books Read Last Summer</p>
Frequency	The number of times an item, number, or event occurs in a set of data. Often represented on a histograms.	

<p>Grouped Frequency Table</p>	<p>The organization of raw data in table form with classes and frequencies</p>	<table border="1" style="display: inline-table; margin-right: 20px;"> <thead> <tr> <th>Type of Pet</th> <th>#of Students</th> </tr> </thead> <tbody> <tr><td>Dog</td><td>14</td></tr> <tr><td>Cat</td><td>8</td></tr> <tr><td>Fish</td><td>3</td></tr> <tr><td>Reptile</td><td>2</td></tr> <tr><td>Rodent</td><td>5</td></tr> <tr><td>Other</td><td>2</td></tr> <tr><td>None</td><td>7</td></tr> </tbody> </table> <table border="1" style="display: inline-table;"> <thead> <tr> <th>Number of Cups of Coffee</th> <th>Tally</th> <th>Frequency</th> </tr> </thead> <tbody> <tr><td>0 - 3</td><td>//</td><td>2</td></tr> <tr><td>4 - 7</td><td>///</td><td>3</td></tr> <tr><td>8 - 11</td><td>/// //</td><td>8</td></tr> <tr><td>12 - 15</td><td>///</td><td>3</td></tr> <tr><td>16 - 19</td><td>//</td><td>2</td></tr> </tbody> </table>	Type of Pet	#of Students	Dog	14	Cat	8	Fish	3	Reptile	2	Rodent	5	Other	2	None	7	Number of Cups of Coffee	Tally	Frequency	0 - 3	//	2	4 - 7	///	3	8 - 11	/// //	8	12 - 15	///	3	16 - 19	//	2
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<p>Histogram</p>	<p>a way of displaying numeric data using horizontal or vertical bars so that the height or length of the bars indicates frequency</p>	<p style="text-align: center;">Frequency Histogram</p> 																																		
<p>Inter-Quartile Range (IQR)</p>	<p>The difference between the first and third quartiles. (Note that the first quartile and third quartiles are sometimes called upper and lower quartiles.)</p>	<p style="text-align: center;">1, 11, 15, 19, 20, 24, 28, 34, 37, 47, 50, 57</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>↑</p> <p>Q₁</p> <p>↓</p> <p>Lower quartile</p> <p>17</p> </div> <div style="text-align: center;"> <p>↑</p> <p>Q₂</p> <p>↓</p> <p>Median</p> <p>26</p> </div> <div style="text-align: center;"> <p>↑</p> <p>Q₃</p> <p>↓</p> <p>Upper quartile</p> <p>42</p> </div> </div>																																		
<p>Maximum value</p>	<p>The largest value in a set of data.</p>	<p style="text-align: center;">Estimation of Standard Deviation Range Rule of Thumb</p> 																																		
<p>Mean</p>	<p>The “average” or “fair share” value for the data. The mean is also the balance point of the corresponding data distribution. $\bar{x} = \frac{x_1 + x_2 + x_3 + \dots + x_n}{n}$</p>	<div style="border: 1px solid orange; padding: 10px;"> <h2 style="margin: 0;">mean</h2> <p style="margin: 0;">The mean is the average or norm.</p> <ul style="list-style-type: none"> • Add up all of the values to find a total. • Divide the total by the number of values you added together. <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 10px;"> <div style="border: 1px solid black; padding: 5px;"> $2 + 2 + 3 + 5 + 5 + 7 + 8 = 32$ <p style="font-size: 8px;">There are 7 values</p> </div> <div style="text-align: center;"> <p>Divide the total by 7</p> </div> <div style="border: 1px solid black; padding: 5px; font-size: 24px; font-weight: bold;"> $32 \div 7 = 4.57$ </div> </div> <p style="text-align: right; margin-top: 5px;">The mean is 4.57</p> </div>																																		
<p>Measures of Center</p>	<p>The mean and the median are both ways to measure the center for a set of data. The value at the center or the middle of the data set.</p>	<p style="text-align: center;">Symmetric Distribution</p> 																																		

Measures of Spread	The range and the interquartile range are both common ways to measure the spread for a set of data.	 <p>A normal distribution curve with a vertical line at the center labeled 'mean'. Four vertical lines extend from the horizontal axis to the curve, labeled from left to right as '-2 sd', '-1 sd', '+1 sd', and '+2 sd'.</p>
Median	The value for which half the numbers are larger and half are smaller. If there are two middle numbers, the median is the arithmetic mean of the two middle numbers. Note: The median is a good choice to represent the center of a distribution when the distribution is skewed or outliers are present.	 <p>median The median is the middle value. • Put all of the values into order. • The median is the middle value. • If there are two values in the middle, find the mean of these two. 2, 2, 3, 5, 5, 7, 8 The median is 5</p>
Minimum value	The smallest value in a set of data.	 <p>Estimation of Standard Deviation Range Rule of Thumb</p> <p>$\bar{x} - 2s$ (minimum usual value) \bar{x} $\bar{x} + 2s$ (maximum usual value)</p> <p>Range $\approx 4s$</p> <p>or</p> $s \approx \frac{\text{Range}}{4} = \frac{\text{highest value} - \text{lowest value}}{4}$
Mode	The number that occurs the most often in a list. There can be more than one mode, or no mode.	 <p>mode The mode is the most frequent value. • Count how many of each value appears. • The mode is the value that appears the most. • You can have more than one mode. 2, 2, 3, 5, 5, 7, 8 2 5 The modes are 2 and 5</p>
Numerical Data	Consists of numbers only. Numerical data can be any rational numbers.	<p>Types of Data:</p> <ul style="list-style-type: none"> Quantitative variables: These have numerical observations, such as shoe size (7, 8, 9, 7.5, 8.5) Height (178cm, 1.9m) and weight. Qualitative variables: Variables that have non-numerical observations, eg. Eye colour, Favourite food

<p>Outlier</p>	<p>An outlier is an observation that is numerically distant from the rest of the data.</p>	 <p>A scatter plot with a linear regression line. The x-axis ranges from 0 to 100, and the y-axis ranges from 0 to 12. Most data points follow the line, but one point at approximately (30, 9) is significantly above the line and labeled 'Outlier' with a red arrow.</p>
<p>Range</p>	<p>A measure of spread for a set of data. To find the range, subtract the smallest value from the largest value in a set of data.</p>	 <p>range The range is the difference between the lowest and highest value. • Find the highest and lowest values. • Subtract the lowest value from the highest. 2, 2, 3, 5, 5, 7, 8 Lowest Highest $8 - 2 = 6$ The range is 6</p>
<p>Skewed Data</p>	<p>When a set of data is not symmetrical it can be skewed, meaning it tends to have a long tail on the left or right side.</p>	 <p>Three bell-shaped curves illustrating different distributions: 1. Left-Skewed: The mean is to the left of the median. 2. Symmetric: The mean and median are in the same position. 3. Right-Skewed: The mean is to the right of the median.</p>
<p>Statistical Questions</p>	<p>A statistical question is one for which you don't expect to get a single answer. Instead, you expect to get a variety of different answers, and you are interested in the distribution and tendency of those answers. For example, "How tall are you?" is not a statistical question, however "How tall are the students in your school?" is a statistical question.</p>	<p>These ARE statistical questions.</p> <ul style="list-style-type: none"> What are the favorite colors of the students in my class? What are the ages of the students in the choir? What are the bedtimes of my classmates? What are the heights of the students in my class?
<p>Variability</p>	<p>Describes how spread out or closely clustered a set of data is. Variability includes range and interquartile range.</p>	 <p>A graph showing frequency on the y-axis and mean on the x-axis. Three normal distribution curves are shown, all centered at the same mean: - Low variability: A narrow, tall curve. - Medium variability: A curve of moderate width and height. - High variability: A wide, short curve.</p>