

Measures of Central Tendency and Measures of Spread Revision

Paper 1: Simple measures of average
Averages from Grouped data
Linear Interpolation
Measures of spread
Outliers

Paper 2: Simple averages
Harder measures of average
(incl Geometric Mean)
Measures of spread
Outliers

MEASURES OF AVERAGE AND SPREAD:

Always use the appropriate measure of spread for the average you can calculate/read off

MEAN

MEDIAN

MODE

OUTLIERS:

GEOMETRIC MEAN

Calculate and estimate for the mean and standard deviation of this data set, you must show all your working:

Height	Frequency					
$100 < x \leq 110$	1					
$110 < x \leq 120$	0					
$120 < x \leq 130$	1					
$130 < x \leq 140$	1					
$140 < x \leq 150$	3					
$150 < x \leq 160$	9					
$160 < x \leq 170$	9					
$170 < x \leq 180$	5					
$180 < x \leq 190$	2					

Hence identify if there are any outliers in this data.:

Calculate an estimate for the median for this data set, you must show all your working:

Height	Frequency					
$100 < x \leq 110$	1					
$110 < x \leq 120$	0					
$120 < x \leq 130$	1					
$130 < x \leq 140$	1					
$140 < x \leq 150$	3					
$150 < x \leq 160$	9					
$160 < x \leq 170$	9					
$170 < x \leq 180$	5					
$180 < x \leq 190$	2					

Hence comment on the skew of this data.:

Height	Frequency					
$100 < x \leq 110$	1					
$110 < x \leq 120$	0					
$120 < x \leq 130$	1					
$130 < x \leq 140$	1					
$140 < x \leq 150$	3					
$150 < x \leq 160$	9					
$160 < x \leq 170$	9					
$170 < x \leq 180$	5					
$180 < x \leq 190$	2					

It turns out one of the data values in the interval $180 < x \leq 190$ had been recorded incorrectly and should have been in the interval $170 < x \leq 180$.

Without any further calculations, explain the effect this would have on the mean, median and standard deviation :

Mean

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Median

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Standard Deviation

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The percentage voter turn out for the last six general elections is given in the table below

Calculate the average voter turn out over the last six general elections

Year	Percentage turn out
2001	59.4%
2005	61.4%
2010	65.1%
2015	66.2%
2017	68.8%
2019	67.3%

Cameron has collected data about the engine size of 200 cars.

He has used statistical software to calculate the following summary statistics

Mean	1297.3
Standard deviation	295.1
Minimum	0
Lower quartile	1163
Median	1278
Upper quartile	1456.25
Maximum	2350
Range	2350
Interquartile range	293.25

Explain how you can tell that Cameron has not cleaned the data.

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With reference to the advantages and disadvantages of the different measures of central tendency, explain whether Cameron should use the mean or the median when analysing this data.

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Which measure of spread should he use when analysing this data? Explain your decision.

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