

Statistic for Educational Research

MPU1034

Topic 3 : Central Tendency

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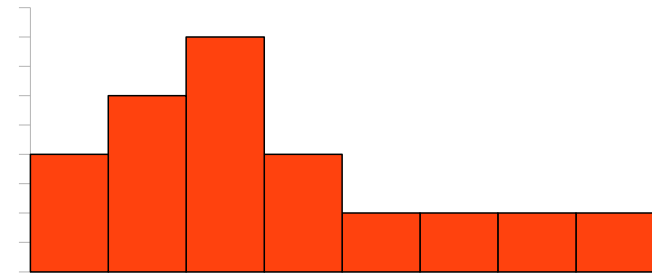
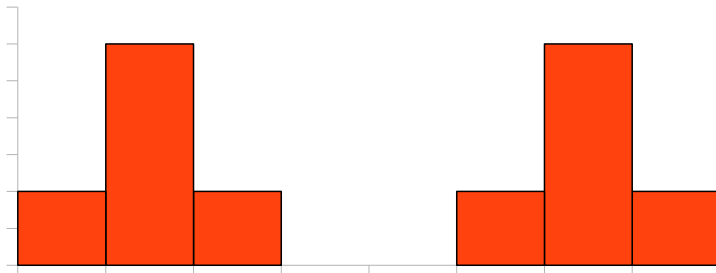
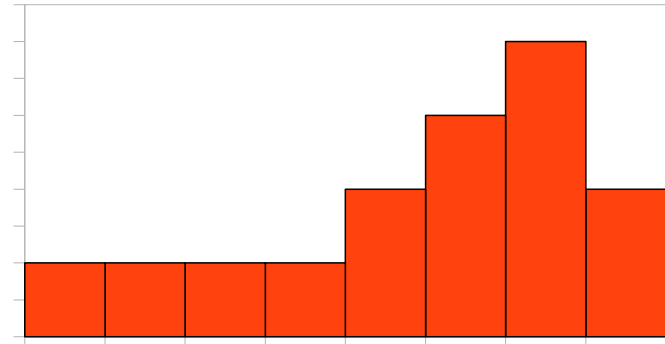
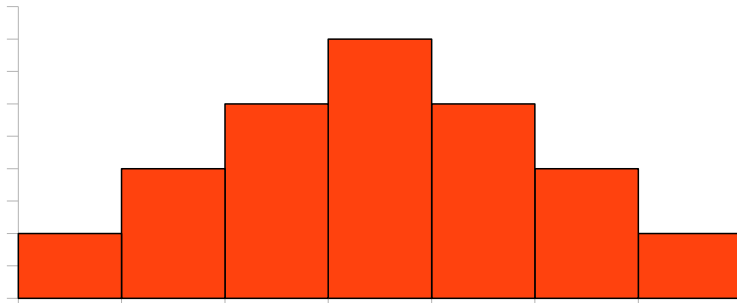


Mean and Median and Mode Shape of the Distribution

Central Tendency

- Central tendency determines the centre of the distribution and represents the entire distribution of scores.
- Central tendency is practical when comparing two or more sets of data.
- The three commonly used method to determine central tendency is **mean**, **median** and **mode**.

Central Tendency (2)

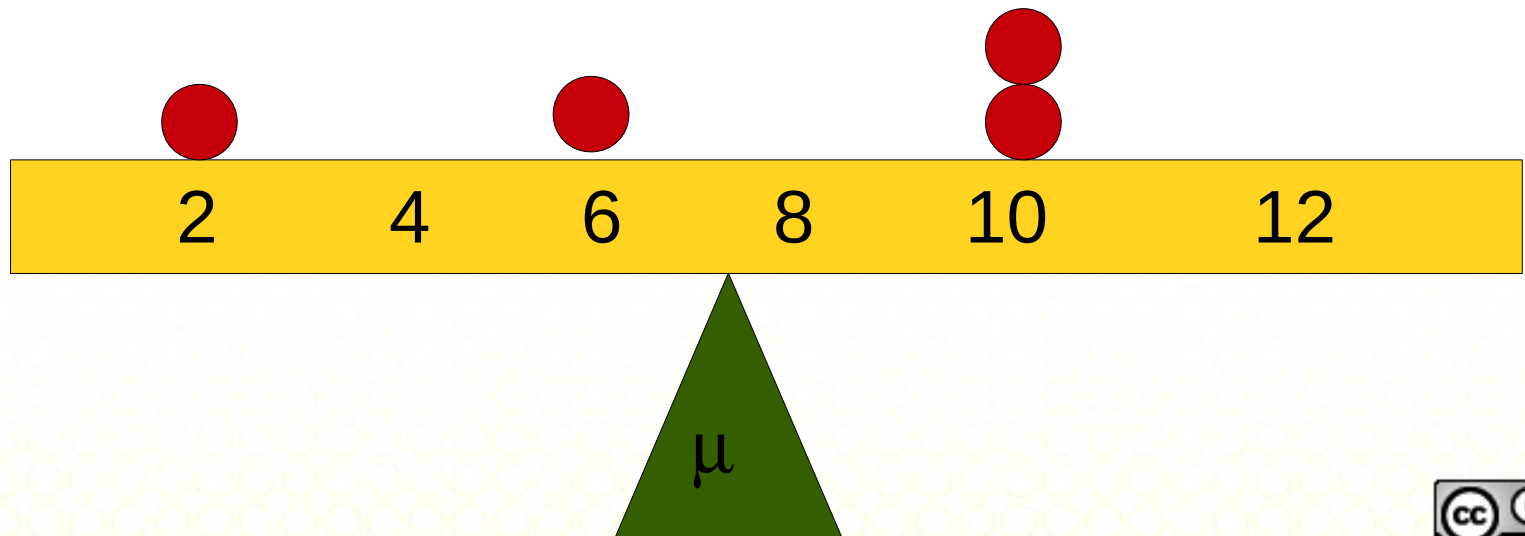


The Mean

- The mean is suitable for that is measured on an interval or ration scale.
- The mean is obtained by computing the sum for score the dividing this sum by the number of scores (n).

The Mean (2)

1. What is the sum of scores?
2. What is the number of scores?
3. What is the mean?



Changing the Mean

- If constant value is added to every score, then the same value is added to the mean. If every score is multiplied by a constant value, then the mean is also multiplied by the same value.

Changing the Mean (2)

- Marks for a statistic test for 10 students:
7,7,8,8,5,9,6,5,4,5,6
- What is the mean?
- When each student marks is added with 3 marks, what happen to the mean?

When the Mean Won't Work

- When a distribution is extremely skewed then the mean does not provide a good central value.

The Median

- If the scores in a distribution are listed in order from smallest to largest, is known as median.
- Computation of the median requires scores that can be placed in rank order (smallest to largest) and are measured on an ordinal, interval, or ratio scale.

The Median (2)

1. With an odd number of scores, list the values in order, and the median is the middle score in the list.
2. With an even number of scores, list the values in order, and the median is half-way between the middle two scores.

The Median (3)

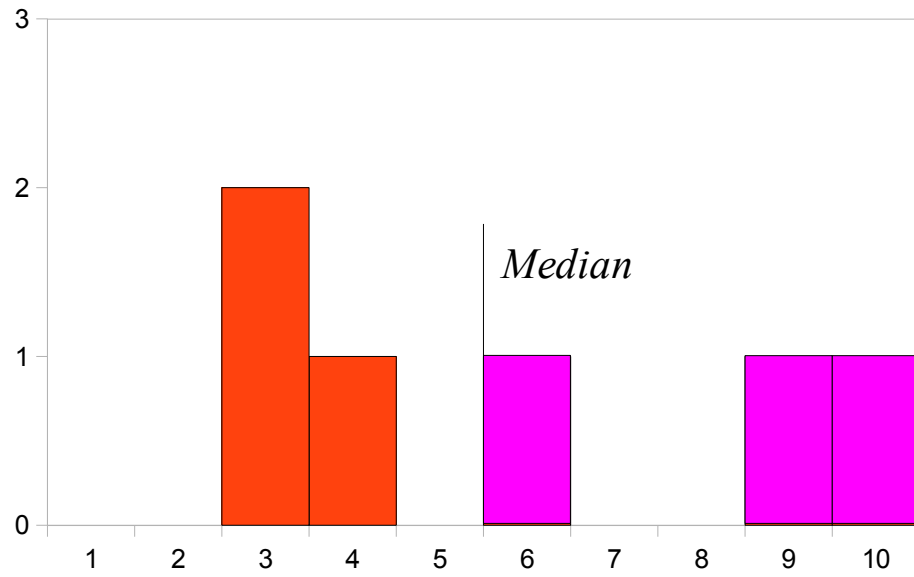
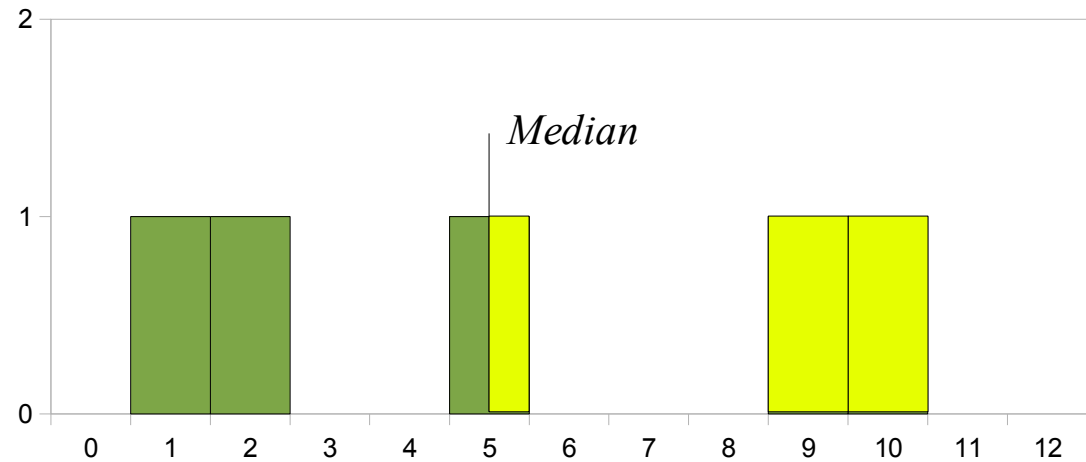
1. What is the median for these set of value :

a. 4,8,5,5,6,6,7,9,10

b. 25,25,30,35,40,45,45,45,45,50

The Median (4)

How do we determine the median?

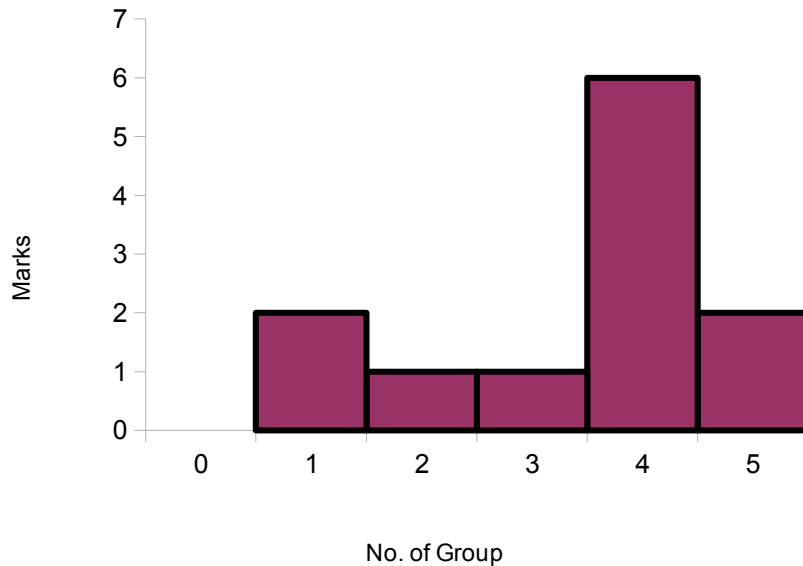


The Median (5)

How do we determine the median?

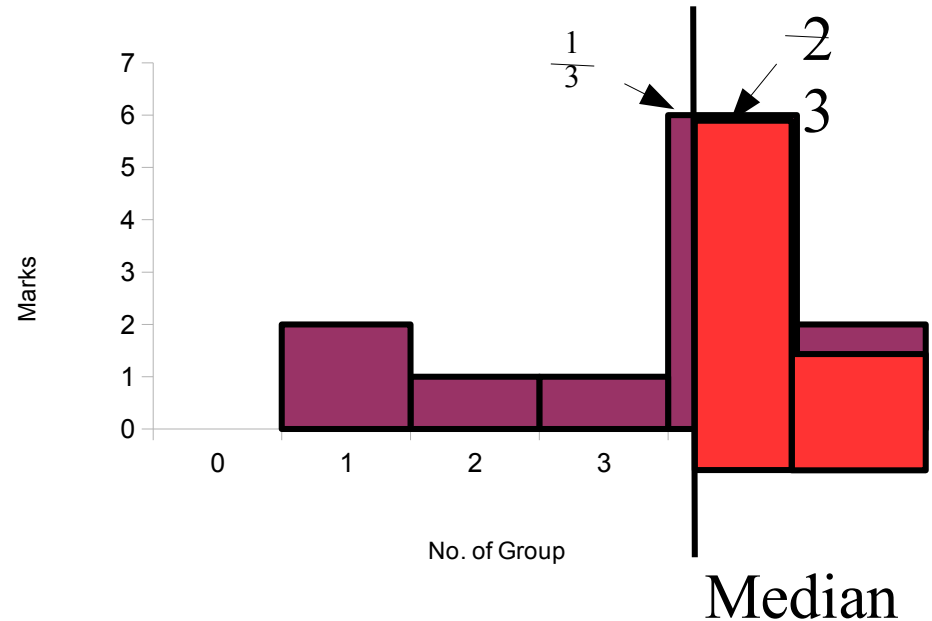
Groups' Marks in Science Quiz

(Class Year 6 Perdana)



Groups' Marks in Science Quiz

(Class Year 6 Perdana)



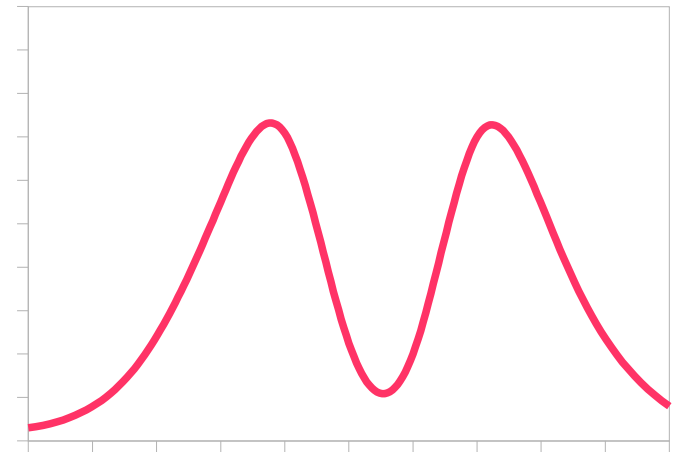
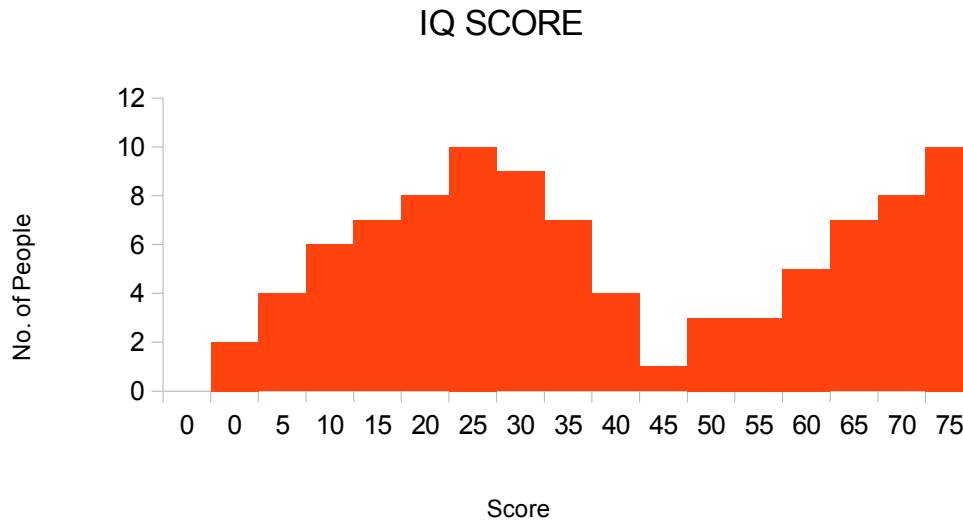
The Median (6)

- The median is that not unaffected affected by extreme scores, that is or when the distribution is very skewed.
- In these situations, the median serves as a better measure for central tendency compare to the mean.

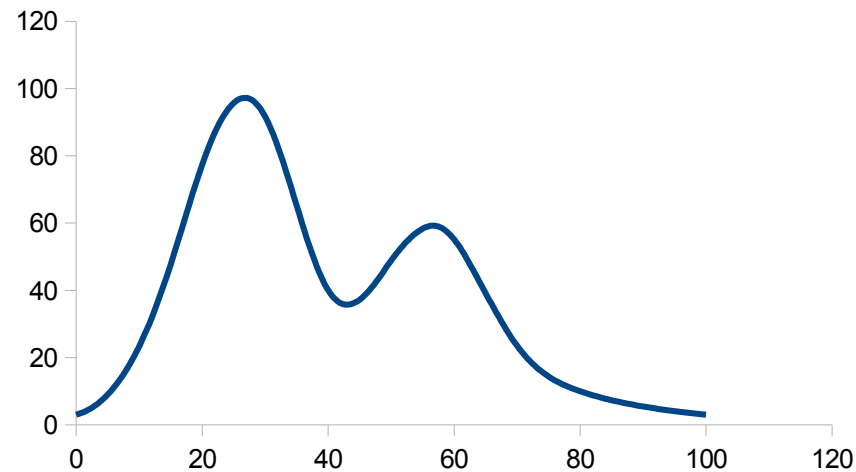
The Mode

- The mode is refer to the score that occurs most frequently.
- In a frequency distribution graph, where is the location of the mode?
- The mode is appropriate for data measured on nominal, ordinal, interval or ration.
- The mode is the only way to measure central tendency for data on a nominal scale.

Bimodal Distributions



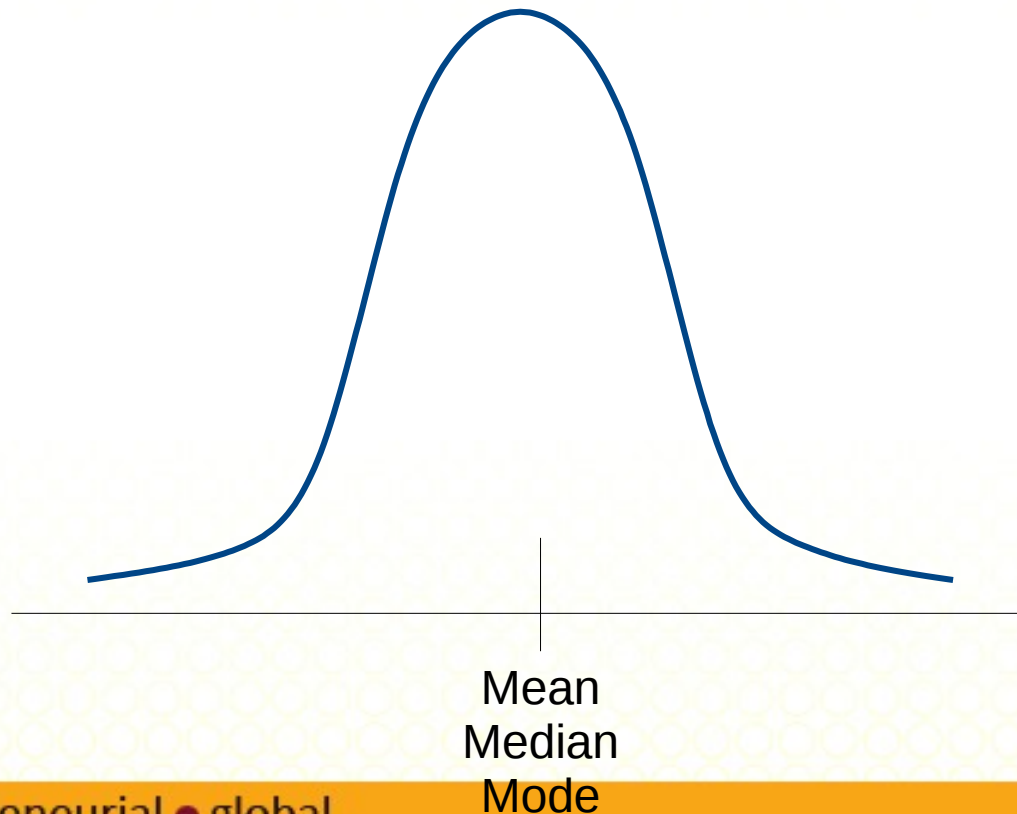
Bimodal Distributions (2)



Distribution with major mode and minor mode

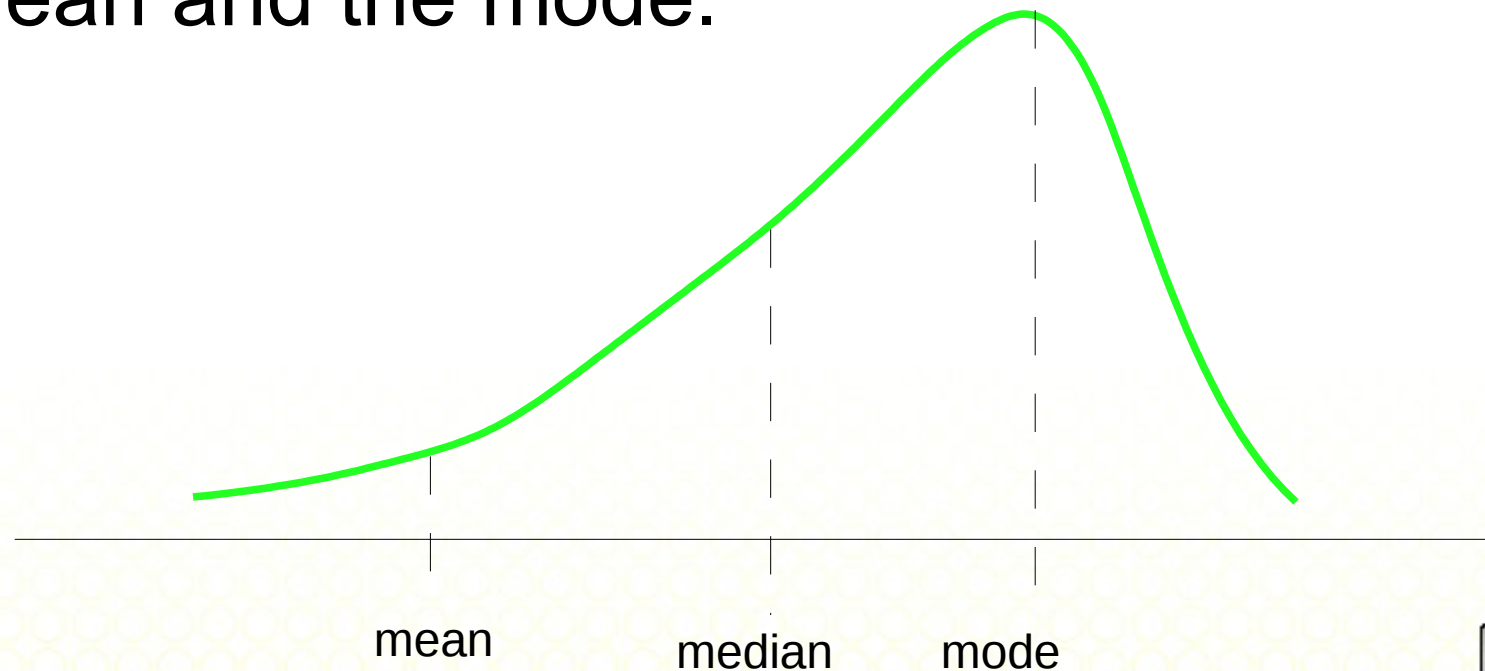
Symmetrical Distribution

In a symmetrical distribution, the mean and median will always be equal.



Skewed Distribution

- In a skewed distribution, the mode will be located at the peak while the at mean at the tail on the other side.
- The median is usually located between the mean and the mode.



Central Tendency in Research Reports

English Score		
	Experimental	Control
Tuition	60	85
No Tuition	55	73

The mean number of errors made on the task for experimental and control groups according the students' need.

Central Tendency in Research Reports (2)

