

Median:

For data containing one or two very large or very small values (extreme values), the mean may not be representative. The center for such data can be better described by a measure of location called the Median.

The midpoint of the values after they have been ordered from the smallest to the largest, or the largest to the smallest.

⇒ Properties of Median:

- It is not affected by extremely large or small values.
- It can be computed for ordinal-level data/ranked data/ordered data.

Example

Facebook is a popular social networking website. Users can add friends and send them messages, and update their personal profiles to notify friends about themselves and their activities. A sample of 10 adults revealed they spent the following number of hours last month using Facebook.

3	5	7	5	9	1	3	9	17	10
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Find the median number of hours.

Solution

Note that the number of adults sampled is even (10). The first step, as before, is to order the hours using Facebook from low to high. Then identify the two middle times. The arithmetic mean of the two middle observations gives us the median hours. Arranging the values from low to high:

1	3	3	5	5	7	9	9	10	17
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The median is found by averaging the two middle values. The middle values are 5 hours and 7 hours, and the mean of these two values is 6. We conclude that the typical Facebook user spends 6 hours per month at the website. Notice that the median is not one of the values. Also, half of the times are below the median and half are above it.

⇒ Example:

Prices data:

70,000 , 80,000 , 60,000 , 65,000 , 275,000

Prices ordered from low to high.

60,000

65,000

70,000

80,000

275,000

$$\bar{x} = 70,000$$

⇒ Example:

heights of students (cms)

87, 91, 89, 88, 89, 91, 87, 92, 90, 98

ordered observations are:

87, 87, 88, 89, 89, 90, 91, 91, 92, 98

$$\bar{x} = \frac{89+90}{2}$$

$$= \boxed{89.5 \text{ cm}}$$

→ Example :

Given below are the marks obtained by 9 students

45, 32, 37, 46, 39, 36, 41, 48 & 36.

32, 36, 36, 37, 39, 41, 45, 46, 48

$$\boxed{\bar{x} = 39 \text{ marks}}$$