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NCERT Class 9 Solutions: Statistics (Chapter 14) Exercise 14.4-Part 1 (For CBSE, ICSE, IAS, NET, NRA 2022)

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<p>MEAN Commonly used in sport to find out a score in sports like Football, Basketball and Cricket</p> <p>Is also known as the "average"</p> <ol style="list-style-type: none"> 1. Add up all the values to get the <u>total</u> 2. Then divide the <u>total</u> by the <u>number of values</u> you added together $3 + 4 + 8 + 7 + 5 + 3 = 30$ $30 \div 6 = 5$ <p>The average for these values is 5</p> 	<p>MEDIAN Used when comparing house prices.</p> <p>The "middle" number in a set of values</p> <ol style="list-style-type: none"> 1. First put all the values in order 2. Find the <u>middle</u> number in the set of data 3. If there are two values in the middle, find the mean of these two. <p>1, 2, 4, 5, 6, 8, 9</p> <p>The median is 5.</p> 
<p>Mode Eg. What is the mode of goals kicked by a footballer after each round?</p> <p>The number which <u>occurs the most</u></p> <ol style="list-style-type: none"> 1. Count how many of each value appears 2. The mode is the value which appears the <u>most</u> 3. There can be more than 1 mode <p>1, 2, 2, 5, 6, 6, 9</p> <p>2 and 6 are the mode for these values</p> 	<p>range Measures difference between all the values. Used in weather.</p> <p>The range is the difference between the highest and lowest value</p> <ol style="list-style-type: none"> 1. Find the highest and lowest values 2. Subtract the lowest value from the highest value. <p>9 - 1 = 8 The range is 8</p> 

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Q-1 The following number of goals was scored by a team in a series of 10 matches:

2, 3, 4, 5, 0, 1, 3, 3, 4, 3

Find the mean, median and mode of these scores.

Solution:

Mean

$$\text{Mean} = \frac{\text{Sum of all 10 matches}}{10}$$

$$= \frac{2 + 3 + 4 + 5 + 0 + 1 + 3 + 3 + 4 + 3}{10}$$

$$= \frac{2.8}{10} = 2.8 \text{ goals}$$

Median

Arrange the score in ascending order: 0, 1, 2, 3, 3, 3, 3, 4, 4, 5

So, the number of observation is 10 (even) .

$$\text{Median} = \frac{\left(\frac{n}{2}\right) \text{ observation} + \left(\frac{n}{2} + 1\right) \text{ observation}}{2}$$

$$= \frac{5 \text{ th observation} + 6 \text{ th observation}}{2}$$

$$= \frac{3 + 3}{2} = \frac{6}{2} = 3$$

Mode

Mode is the observation with the maximum frequency data.

So, 3 is the maximum frequency.

Hence, mode score of data is **3**.

Q-2 In a mathematics test given to 15 students, the following marks (out of 100) is recorded: 41, 39, 48, 52, 46, 62, 54, 40, 96, 52, 98, 40, 42, 52, 60

Find the mean, median and mode of this data.

Solution:

Mean

$$\text{Mean} = \frac{\text{Sum of all 15 students}}{15}$$

$$= \frac{41 + 39 + 48 + 52 + 46 + 62 + 54 + 40 + 96 + 52 + 98 + 40 + 42 + 52 + 60}{15}$$

$$= \frac{822}{15} = 54.8$$

Median

To arrange the data in increasing order: 39, 40, 40, 41, 42, 46, 48, 52, 52, 52, 54, 60, 62, 96, 98

The number of items is 15 (odd) .

$$\text{So, Median} = \left(\frac{n+1}{2} \right)^{\text{th}} \text{ observation}$$

$$= 15 + \frac{1}{2} = 8^{\text{th}} \text{ Observation}$$

Hence, 8th observation is **52**.

Mode

52 occur maximum times (3times) .

So, mode is **52**.

Q-3 The following observations have been arranged in ascending order. If the median of the data is 63, find the value of x .

$$29, 32, 48, 50, x, x + 2, 72, 78, 84, 95$$

Solution:

The number of observation is 10 (even) .

$$\text{So, Median} = \frac{\left(\frac{n}{2} \right) \text{ observation} + \left(\frac{n}{2} + 1 \right) \text{ observation}}{2}$$

$$63 = \frac{5 \text{ th observation} + 6 \text{ th observation}}{2}$$

$$63 = \frac{x + x + 2}{2}$$

$$63 \times 2 = 2x + 2$$

$$\frac{126 - 2}{2} = X$$

$$\frac{124}{2} = X$$

$$X = 62$$