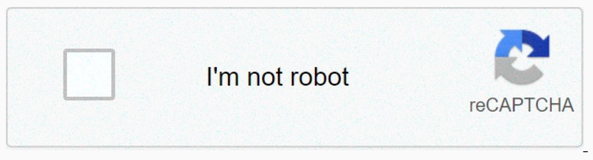

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Elementary statistics pdf class 11

Prof. JP Goel was a prominent and dedicated faculty at Hindu Post Graduate College, Sonipat (Haryana). He retired as associate professor & head of economics in November 2009. During his 36-year teaching career he has taught graduate & postgradu graduate classes. He has also been a member of the Board of Economics, Maharishi Dayanand, University, Rohtak (Haryana). He has authored more than a dozen textbooks. He has been known for his outstanding academic achievement. He has regularly held workshops on the subject and has interaction with a large number of teachers across the country. Through his long teaching experience and interaction with the teachers at the High School, he is well aware of the problems that students as well as teachers face while dealing with the subject. All of this has given him insight into how to help students while answering exam questions. In statistics class 11, the importance of statistics in the study of dispersal measures and methods for calculating the grouped and non-grouped data has been explained. In applied mathematics, statistics are a branch that deals with the collection, organization and interpretation of data. This corresponds to the study of the probability of events occurring on the basis of data collection or the known amounts of data. Some of the concepts and examples involved and the statistics for Class 11 are explained in detail. Measures of dispersion The dispersion or dispersion of the data shall be measured on the basis of the observations and types of measurement of the central trend. The different types of targets for dispersion are: Area quartile deviation Average deviation Standard deviation. In Class 11 statistics, you will have a clear knowledge of all measures of dispersion except quartile deviation, which will be examined in your higher classes. Range Range Range is the difference between the maximum value and the minimum value range = Maximum value – Minimum average variance The average deviation is the basic measure of deviations from the value, and the value is generally a mean or a median value. To find out the average deviation, first take the mean of the deviation for observations from the value is d = x - a Here x is observation, and a is the fixed value. The basic formula for finding out the mean deviation is Mean Deviation = Sum of absolute values of deviations from 'a' / Number of observations Average deviation for ungrouped data Calculation of mean deviation for ungrouped data includes the following steps: Let's assume the observations x1, x2, x3, ... xn Step 1: Calculate the central trend measures by finding the average deviation and let it be 'a'. Step 2: Find the deviation of the xi from one, ie x1 - a, x2-a, x3 - a,. . . , xn- a step 3: find the absolute values of i.e. | x1 - one |, | x2 - a |, |x3 - a|,. . . ,|xn- a| and drop the minus sign (–), if it is there, step 4: calculate the average of the absolute values of the deviations. This obtained remedy is the average deviation of a, i.e., \(M.D (a)= \frac{\sum_{i=1}^{n}\left |x_{i}-a \right |} {n}\) \(M.D (\bar{x})= \frac{\sum_{i=1}^{n}\left |x_{i}-\bar{x} \right |} {n}\) where \(\bar{x}\) = Average \(M.D (M)= \frac{\sum_{i=1}^{n}\left |x_{i}-M \right |} {n}\), Where M = Median mean deviation for group-injected data The data can be grouped in two ways: Discrete frequency distribution Continuous frequency distribution The methods for finding the average deviation for both types are specified under Discrete Frequency Distribution Here, the given data consists of n different values x1, x2, x3,.... xn has the frequencies f1, f2, f3,.... Un. This data is represented in tabular form as and is called discrete frequency distribution, and the data is given below x x1 x2 x3..... xn f f1 f2 f3..... fn Mean Deviation About meanA Search first in mean \(\bar{x}\), using the specified formula : \(\bar{x}=\frac{\sum_{i=1}^{n}x_{i}f_ x_ <2> <2>{i}}{\sum_{i=1}^{n}f_ is specified the sum of the observation sum_ xi{1} with the respective frequencies, f_ x_ and the denominator indicates the sum of frequencies, if the counter indicates the sum of observations xi with the respective frequencies fi and the denominator indicates the sum of frequencies. Now take the absolute values \(\left | x_{i}-\bar{x} \right |\) , for all i = 1, 2, 3, .. n Therefore, the required mean deviation for the mean of \(M.D(\bar{x})=\frac{\sum_{i=1}^{n}f_{i}\left | x_{i}-\bar{x} \right |} {\sum_{i=1}^{n}f_{i}}=\frac{1}{N}\sum_{i=1}^{n}f_{i}\left | x_{i}-\bar{x} \right |\) Average median variance To find the average median variance for the specified separate frequency distribution. First arrange observation in ascending order to get cumulative frequency that is equal to or greater than N/2, where N is the sum of the frequencies. Therefore, the average deviation for the median is given by \(M.D(M)= \frac{1}{N}\sum_{i=1}^{n}f_{i}\left | x_{i}-M \right |\) Continuous frequency distribution To find the average deviation for continuous frequency distribution, assume that the frequency in each class is centered. After finding the midpoint, continue further to find the average deviation corresponding to the discrete frequency distribution. Standard deviation The positive square root of variance is called standard deviation (SD) and it is indicated by the symbol, σ and the formula to find SD are given by \(\sigma =\sqrt{\frac{1}{n}\sum_{i=1}^{n}(x_{i}-\bar{x }^{2}}\) Where the variance is set to σ2, and it is specified by \(\sigma^{2} =\frac{1}{n}\sum_{i=1}^{n}(x_{i}-\bar{x})^{2}\) Class 11 Statistics Samples here, statistics solved problem is given below. Go once to get a clear idea to solve the problem. Question : Get the variance and the standard deviation for data : xi 4 8 11 17 20 24 32 fi 3 5 9 5 4 3 1 Solution : Data in tabular form : xi fi fi xi \(x_{i}-\bar{x}\) \((x_{i}-\bar{x})^{2}\) \(f_{i}(x_{i}-\bar{x})^{2}\) 4 8 11 17 20 24 32 3 5 9 5 4 3 1 12 40 99 85 80 72 32 -10 -6 -3 3 6 10 18 100 38 9 9 36 100 324 300 180 81 45 144 300 324 30 420 1374 Here, N = 30 = fi \(\sum_{i=1}^{7}f_{i}x_{i}=420\) \(\sum_{i=1}^{7}f_{i}(x_{i}-\bar{x})^{2}=1374\) Therefore, \(\bar{x}=\frac{\sum_{i=1}^{7}f_{i}x_{i}}{N}\) = 420/30 = 14 \(\bar{x}\)= 14 Variance = \(\sigma^{2} =\frac{1}{n}\sum_{i=1}^{n}(x_{i}-\bar{x})^{2}\) \(\sigma^{2} =\frac{1}{n}\sum_{i=1}^{7}f_{i}(x_{i}-\bar{x})^{ 2}\) = 1374/30 = 45.8 Variance = 45.8 Standard Deviation (σ) = \(\sqrt{45.8}\) = 6.77 77 Sign up with byju's learning app for more information about math class 11 chapters and other related articles and start practicing the problems. Books are one of the most important elements of an exam. 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