Easy:

Q. What is the mean of the following dataset: {5, 8, 12, 8, 6}?

Q. Calculate the median of the dataset: {15, 20, 25, 30, 35, 40}.

Q. In the dataset {2, 3, 5, 5, 7, 8, 8, 8, 9}, what is the mode?

Q. Find the variance of the dataset: {10, 12, 14, 16, 18}.

Q. Calculate the standard deviation of the following set: {25, 30, 35, 40, 45}.

Medium:

Q. Find the mean deviation about the mean for the below 2 data.

4,7,8,9,10,12,13,17
38, 70, 48, 40, 42, 55, 63, 46, 54, 44

Q. Find the mean deviation about the median for the below 2 data.

13, 17, 16, 14, 11, 13, 10, 16, 11, 18, 12, 17
36, 72, 46, 42, 60, 45, 53, 46, 51, 49

Q. Consider the following distribution of daily wages of 50 workers of a factory. Find the mean daily wages of the workers of the factory by using an appropriate method.

Daily wages (in ₹)	500 - 520	520 -540	540 - 560	560 - 580	580 -600
Number of workers	12	14	8	6	10

Q. The following distribution shows the daily pocket allowance of children of a locality. The mean pocket allowance is Rs 18. Find the missing frequency *f*.

Daily pocket allowance (in ₹)	11 - 13	13 - 15	15 - 17	17 - 19	19 - 21	21 - 23	23 - 25
Number of children	7	6	9	13	f	5	4

Q. The following table shows the ages of the patients admitted in a hospital during a year. Find the mean of the data given below.

Age (in years)	5 - 15	15 - 25	25 - 35	35 - 45	45 - 55	55 - 65
Number of patients	6	11	21	23	14	5

Q. A survey regarding the heights (in cm) of 51 girls of Class X of a school was conducted and the following data was obtained. Find the median height.

Height (in cm)	Number of girls
Less than 140	4
Less than 145	11
Less than 150	29
Less than 155	40
Less than 160	46
Less than 165	51

Q. The variance of 20 observations is 5. If each observation is multiplied by 2, find the new variance of the resulting observations.

Q. The mean of 5 observations is 4.4 and their variance is 8.24. If three of the observations are 1, 2 and 6, find the other two observations.

Q. The mean and standard deviation of 100 observations were calculated as 40 and 5.1, respectively by a student who took by mistake 50 instead of 40 for one observation. What are the correct mean and standard deviation?

Q. The mean and variance of eight observations are 9 and 9.25, respectively. If six of the observations are 6, 7, 10, 12, 12 and 13, find the remaining two observations.

Q. The mean and variance of 7 observations are 8 and 16, respectively. If five of the observations are 2, 4, 10, 12, 14. Find the remaining two observations.

Percentile and Quartile:

Q. What is the 25th percentile of a dataset with 100 observations?

Q. What is the 75th percentile of the dataset: {12, 15, 18, 20, 22, 24, 26, 28, 30}?

Q. Determine the first quartile (Q1) of the data: {10, 12, 14, 16, 18, 20, 22, 24}.

Q. How do you interpret the difference between the first and third quartiles in skewed distributions compared to symmetric distributions?

Q. Given a dataset with 20 observations, what are the first and third quartiles?

Q. In a dataset with 50 observations, what is the 85th percentile?

Q. In a dataset with 120 observations, what is the 67th percentile, and how many observations fall below this percentile?

Range:

Q. Calculate the range of the following dataset: {5, 10, 15, 20, 25}.

Q. Can the range be negative? Provide examples or counter examples.

Box Plot:

Q. Draw a box plot for the dataset: {10, 12, 14, 15, 16, 18, 20}. Interpret the box plot and describe the distribution represented by it.

Hard

Q. For a symmetrical dataset with 50 observations, if the first quartile is 20 and the median is 35, what could be the approximate third quartile?

Q. Can quartiles be negative? Explain your answer with examples.

Q. If each of the observation x1, x2, ...,xn is increased by ‘a’, where a is a negative or positive number, show that the variance remains unchanged.

Q. The mean and standard deviation of six observations are 8 and 4, respectively. If each observation is multiplied by 3, find the new mean and new standard deviation of the resulting observations.

Q. Given that x is the mean and σ^2 is the variance of n observations x_1, x_2, ...,x_n. Prove that the mean and variance of the observations ax_1, ax_2, ax_3, ..., ax_n are aμ and a^2 σ^2, respectively, ($a \neq 0$).

Q. The mean and standard deviation of 20 observations are found to be 10 and 2, respectively. On rechecking, it was found that an observation 8 was incorrect. Calculate the correct mean and standard deviation in each of the following cases: (i) If the wrong item is omitted. (ii) If it is replaced by 12.

Q. The mean and standard deviation of a group of 100 observations were found to be 20 and 3, respectively. Later on it was found that three observations were incorrect, which were recorded as 21, 21 and 18. Find the mean and standard deviation if the incorrect observations are omitted.