Unit 11 · Statistics

WORKSHEET

Full marks 28

Name _____ Class _____ Roll no. _____ Date _____ Marks _____ / 28

1 Key words [3]

Fill in the blanks with words from the box. Two words in the box are not needed. Each blank carries 0.5 mark.

coefficient of variation	dispersion	mean deviation	median	quartile deviation	range	standard deviation	variance

How spread out the values of a data set are is called their _____. Half of $Q_3 - Q_1$ is the _____. The mean of the distances of the values from their mean, taken without their signs, is the _____. The square root of the mean of the squared distances from the mean is the _____, and its square is the _____. The standard deviation as a percentage of the mean is the _____.

2 Multiple choice [5]

Choose the correct option for each of the following questions.

i. If $Q_1 = 24$ and $Q_3 = 40$, what is the quartile deviation? [1]

a. 8 **b.** 16

c. 32 **d.** 0.25

ii. For the same quartiles, $Q_1 = 24$ and $Q_3 = 40$, what is the coefficient of quartile deviation? [1]

a. 0.5 **b.** 0.25

c. 0.6 **d.** 8

iii. Every value of a data set is increased by 5. What happens to the standard deviation? [1]

a. it increases by 5 **b.** it does not change

c. it is multiplied by 5 **d.** it increases by 25

iv. The mean of a data set is 40 and its standard deviation 6. What is its coefficient of variation? [1]

a. 6.67% **b.** 0.15%

c. 15% **d.** 240%

v. The variance of a data set is 2.25. What is its standard deviation? [1]

a. 1.5 **b.** 1.125

c. 5.0625 **d.** 0.15

3 Very short answers [2]

Write very short answers to the following questions.

a. Write the formula for the standard deviation of a continuous series by the direct method. [1]

b. The coefficients of variation of the weights of two groups are 18% and 25%. Which group's weights are more uniform? **[1]**

4 Short answers **[8]**

Write short answers to the following questions.

a. Find the mistake. For a table with $N = 20$, $\Sigma fm = 400$ and $\Sigma fm^2 = 8500$, Ramesh writes $\sigma = \sqrt{\frac{8500}{20} - \frac{400}{20}} = \sqrt{405} \approx 20.12$. What has he done wrong? Find the correct σ. **[2]**

b. Work backwards. The coefficient of variation of a data set is 20% and its mean is 45. Find its standard deviation and its variance. **[2]**

c. The ages (years) of nine children at a party are 12, 15, 9, 20, 18, 11, 14, 25 and 16. Find the five values a box plot of their ages needs. **[2]**

d. Find the quartile deviation and its coefficient. **[2]**

Marks	**0–10**	**10–20**	**20–30**	**30–40**	**40–50**
Students	3	7	12	6	2

5 Long answers [8]

Solve the following problems. Show your working.

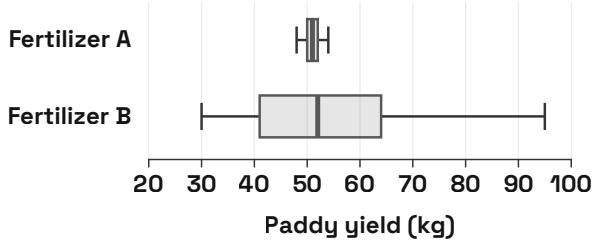
a. The daily earnings of 50 workers are: [4]

Earnings (Rs)	200–400	400–600	600–800	800–1000	1000–1200
Workers	6	10	18	11	5

a. Find the mean earning.
b. Find the standard deviation by the step deviation method.
c. Find the coefficient of variation.
d. Another group of workers has a mean of Rs 900 and a standard deviation of Rs 250. Which group's earnings are more uniform?

Answer: _____

b. The box plots show the yield of paddy (kg) from a field over ten years with two fertilizers. [4]



a. Write the median yield with each fertilizer.
b. Find the interquartile range of each.
c. Find the coefficient of quartile deviation of each.
d. Which fertilizer gives the more dependable yield? Give a reason.

6 Think [2]

Think, then answer.

Can the standard deviation of a data set be larger than its range? Give a reason.

7 Activity: Hand spans (not marked)

Measure the hand span (thumb tip to little-finger tip, hand spread flat) of 10 classmates in centimeters. Fill in the table, then find the mean, the mean deviation and the standard deviation.

Student	Span x (cm)	$x - \overline{X}$	Distance from the mean	$(x - \overline{X})^2$
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				