

Case Studies on Statistics (Class X)

Case Study 1

Activities like running or cycling reduce stress and the risk of mental disorders like depression. Running helps build endurance. Children develop stronger bones and muscles and are less prone to gain weight. The physical education teacher of a school has decided to conduct an inter school running tournament in his school premises. The time taken by a group of students to run 100 m, was noted as follows: (March-2024)

Time (in seconds)	0-20	20-40	40-60	60-80	80-100
Number of students	8	10	13	6	3

Based on the above, answer the following questions:

- i) What is the median class of the above given data?
- ii) a) Find the mean time taken by the students to finish the race.

(OR)

- b) Find the mode of the above given data
- iii) How many students took time less than 60 seconds ?

Case Study 2

Group Visit to Museum

A group of 71 people visited to a museum on a certain day. The following table shows their ages.

Age (in years)	Number of persons
Less than 10	3
Less than 20	10
Less than 30	22
Less than 40	40
Less than 50	54
Less than 60	71

Based on the above information, answer the following questions.

- (i) If true class limits have been decided by making the classes of interval 10, then first class must be
- (a) 5-15 (c) 10-20
(b) 0-10 (d) none of these
- (ii) The median class for the given data will be
- (a) 20-30 (c) 30-40
(b) 10-20 (d) 40-50
- (iii) The cumulative frequency of class preceding the median class is
- (a) 22 (c) 25
(b) 13 (d) 35
- (iv) The median age of the persons visited the museum is
- (a) 30 years (c) 34 years
(b) 32.5 years (d) 37.5 years
- (v) If the price of a ticket for the age group 30-40 is 30, then the total amount spent by this age group is
- (a) 360 (c) 540
(b) 420 (d) 340

Case Study 3

Vocational training complements traditional education by providing practical skills and hands-on experience. While education equips individuals with a broad knowledge base, vocational training focuses on job-specific skills, enhancing employability thus making the student self-reliant. Keeping this in view, a teacher made the following table giving the frequency distribution of students/adults undergoing vocational training from the training institute.

Age (in years)	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54
Number of participants	62	132	96	37	13	11	10	4

From the above answer the following questions:

- (i) What is the lower limit of the modal class of the above data?
- (ii) (a) Find the median class of the above data.

OR

- (b) Find the number of participants of age less than 50 years who undergo vocational training.
- (iii) Give the empirical relationship between mean, median and mode. (2024)

Case Study 4

The India Meteorological Department observes seasonal and annual rainfall every year in different sub-divisions of our country. It helps them to compare and analyse the results. The table below shows sub-divisions wise seasonal (monsoon) rainfall (in mm) in 2023.

Rainfall (mm)	No. of Sub-divisions
200-400	3
400-600	4
600-800	7
800-1000	4
1000-1200	3
1200-1400	3

Based on the information given above, answer the following questions:

- (i) Write the modal class.
- (ii) (a) Find the median of the given data.

OR

- (b) Find the mean rainfall in the season.
- (iii) If a sub-division having at least 800 mm rainfall during monsoon season is considered a good rainfall sub-division, then how many sub-divisions had good rainfall? (2025)