

Exercise 08 – December 18, 2025 – January 08, 2026

1. Construct a Box Plot

The following dataset shows the scores of 12 students on a quiz:

Dataset:

45, 50, 52, 55, 60, 62, 65, 68, 70, 72, 75, 80

Tasks:

- Determine the five-number summary (minimum, 25th Quartile, 50th Quartile, 75th Quartile, maximum).
- Draw the box plot based on the five-number summary with whiskers (use $1.5 * H$ -spread to identify outliers for step).

2. A teacher wants to select 4 students from a class of 10 students and then arrange them in order to present their project. How many different ordered presentation lines are possible?

3. A company wants to study how Training Program and Practice Duration affect employee performance scores.

Factor A (Training Program)

A1 = Standard and A2 = Intensive

Factor B (Practice Duration)

B1 = 1 hour, B2 = 2 hours, B3 = 3 hours and B4 = 4 hours

Each combination has $n = 3$ employees.

Performance scores are shown below.

Training \ Practice	1 h (B1)	2 h (B2)	3 h (B3)	4 h (B4)
Standard (A1)	60, 62, 58	65, 66, 64	70, 72, 68	75, 77, 73
Intensive (A2)	65, 67, 63	72, 74, 70	78, 80, 76	85, 87, 83

Using $\alpha = 0.05$, perform a Two-Way ANOVA.

4. A company records the average delivery time for 36 packages as 48 minutes. The population standard deviation is $\sigma = 6$ minutes.

Construct a 99% confidence interval for the population mean delivery time.

5. A university investigates whether gender is associated with preference for online learning.
A survey of 120 students gives the following data:

Gender	Prefer Online	Prefer Face-to-Face	Total
Male	35	25	60
Female	20	40	60
Total	55	65	120

Test at $\alpha = 0.05$ whether gender and learning preference are independent.