

Class Exercise

1. Marathon Finish Times

A local marathon recorded the finish times (in minutes) for 40 amateur runners. The data is sorted in ascending order below:

195	202	210	215	215	218	220	225	230	232
235	240	245	248	250	252	255	258	260	265
270	272	275	278	280	285	290	295	300	305
310	315	320	330	345	350	360	375	390	410

- Calculate the Interquartile Range (IQR) and interpret it in the context of the problem.
- Calculate the 90th percentile.
- Calculate the 15th percentile.

2. Coffee Consumption

A survey was conducted at a local office asking employees how many cups of coffee they consumed over a 5-day work week. The results are presented in the frequency table below:

Cups of Coffee	Number of Employees
0	5
2	14
4	22
6	18
8	12
10	7
12	2

- Calculate the top and bottom 10% percentiles for this data.
- Calculate the three quartiles.
- Calculate and interpret the Interquartile Range (IQR).

3. Laptop Battery Life Comparison

You have a dataset of $n = 24$ data points. Which integer percentiles are not defined for your dataset?

4. Laptop Battery Life Comparison

A tech reviewer tested the battery life (in hours) of two different laptop models, Model A and Model B. Note that the sample sizes for the two models are different.

Model A (20 units tested):

6.2, 6.5, 6.8, 7.0, 7.1, 7.2, 7.4, 7.4, 7.5, 7.7, 7.8, 7.9, 8.0, 8.2, 8.4, 8.5, 8.7, 9.0, 9.2, 11.5

Model B (15 units tested):

5.5, 5.8, 6.0, 6.1, 6.3, 6.4, 6.5, 6.6, 6.8, 6.9, 7.0, 7.2, 7.5, 7.8, 8.0

- a. Compute the IQR for Model A and identify if any outliers exist using the $1.5 \times \text{IQR}$ rule.
- b. Compute the IQR for Model B and identify if any outliers exist.
- c. Draw the box-and-whisker plots for the two datasets on the same x-axis.
- d. Compare and contrast the two datasets. Which model appears to have a more consistent battery life? Which model generally lasts longer?