# Assignment 4

1. Suppose that the number of passengers in a bus is recorded for 10 days but two of the readings go missing. The final recorded observations are as follows: 11, 21, 15, 16, 17, NA, 8, NA, 12, 21. What is the correct command to obtain the arithmetic mean of this data in R?

2. The number of rooms booked in a hotel are recorded for 200 days and stored in a data vector `rooms:` 6, 1, 6, 6, 8, 3, 9, 3, 4, 2, 1, 8, 3, 4, 6, 10, 7, 4, 8, 6, 6, 5, 2, 4, 5, 8, 8, 7, 9,10, 9, 8, 7, 2, 7, 2, 9, 2, 8, 2, 6, 9, 2, 5, 8, 3, 1, 6, 8, 5, 3, 4, 6, 6, 7,10, 4, 8, 2, 8, 6, 1, 4, 6, 3, 7,10, 3, 6, 3, 6, 6, 9, 7, 8, 4, 5, 1, 9, 8, 8, 2, 4, 6, 4, 9, 5, 7, 7, 2, 3, 8, 5, 6, 5, 2, 2, 8, 3, 2, 9, 3, 8, 1, 6, 5, 7, 4, 2, 2, 7, 8, 5, 2, 8, 8, 6, 5, 9, 6, 4, 8, 5, 8, 4, 7, 9, 8, 3, 9, 2, 8, 9, 7, 3, 3, 5, 5, 4, 7, 5, 2, 7, 3, 8, 3, 7, 5, 7, 1, 3, 7, 7, 4, 6, 3, 1, 6, 9, 3, 5, 3, 9, 3, 7, 5, 9, 4, 9, 8, 8, 7, 3, 2, 3, 9, 1, 6, 6, 3, 6, 7, 2, 7, 2, 2, 4, 8, 5, 8, 6, 2, 2, 6, 5, 9, 7, 4, 8, 8.

   What is the relation between mean & weighted mean for `wt=c(4,9,1,4,5,6,8,2,7,3)`?

3. A group of ten patients were asked to take an exercise every hour but they didn't follow it exactly. Suppose the number of times they took the exercise is recorded as follows but two patients left without providing their observations. The final data is given as : 8, 7, 6, NA, 5, 9, NA, 5, x, 4. Here the observation x is known but hidden. If the outcome of the command `median(c(8, 7, 6, NA, 5, 9, NA, 5, x, 4), na.rm=TRUE)` is 5.5 then what can be a valid observation in place of x?

4. Suppose the number of cars present in a showroom is recorded for ten showrooms but three observations get missing, resulting the data as follows: 12, 10, 18, NA, 14, 17, 19, NA, 9, NA. What is the correct command to obtain the geometric mean of this data in R?

5. Consider the following data with two missing observations: 3, x, 6, NA, 4, 5, 3, NA, 7, 4, where is an unknown value. If the outcome of the command `prod(c(3, x, 6, NA, 4, 5, 3, NA, 7, 4), na.rm=T)` is 241920 then what can be the number x?

6. What is the correct command to obtain the harmonic mean of 6, 7, 8, 5, 3, 4, 9, 4, 7, 8 in R?

7. Suppose that the number of fishes caught from 10 ponds are recorded as follows but two observations are missing: 33, 38, 36, NA, 25, 29, 34, NA, 27, 30. What is the correct command to obtain the statistical range of this data in R ?

8. Suppose that the number of fishes caught from 10 ponds are recorded as follows but two observations are missing: 33, 38, 36, NA, 25, 29, 34, NA, 27, 30. What is the correct command to obtain the interquartile range of this data in R?

Q. A hospital has 15 rooms and each room has 10 patients admitted. A puzzle for mental exercise was given to every patient in each room. The time (in minutes) taken to complete the puzzle was recorded as follows and stored in a data vector as `puzzletime.`

```
puzzletime=c(8, 13, 21, 9, 15, 29, 6, 13, 24, 27, 3, 22, 21, 20,
21, 20, 8, 27, 10, 17, 9, 7, 13, 15, 14, 23, 11, 20, 12, 21, 11,
27, 29, 3, 6, 6, 18, 8, 17, 6, 5, 11, 24, 22, 19, 20, 22, 21, 8,
20, 17, 28, 13, 4, 7, 24, 23, 16, 19, 29, 16, 20, 21, 23, 8, 1,
11, 16, 9, 16, 13, 10, 17, 18, 28, 10, 23, 27, 16, 8, 14, 9, 9,
18, 14, 21, 28, 16, 20, 11, 26, 7, 5, 25, 29, 27, 17, 24, 23,
27, 13, 3, 7, 27, 28, 18, 7, 9, 13, 9, 5, 27, 26, 27, 9, 4, 7,
10, 19, 19, 13, 9, 20, 16, 27, 20, 3, 26, 23, 11, 28, 21, 5, 19,
11, 18, 12, 22, 9, 11, 5, 28, 3, 12, 9, 11, 8, 17, 6, 11)
```

1. What is the outcome of the following R commands?

```
modetab = table(as.vector(puzzletime))

names(modetab)[modetab == min(modetab)]
```

2. What is the first quartile of the data in `puzzletime`?

3. What is the 35th quantile of the data in `puzzletime`?

Q. Following are the scores of 250 students in a test with minimum and maximum marks being 0 and 100 respectively. The scores are stored in a data vector scores.

99.86, 42.72, 3.66, 66.89, 96.60, 30.08, 49.50, 16.84, 89.14, 14.97, 66.86, 38.32, 71.90, 9.50, 66.92, 58.83, 38.06, 79.95, 95.30, 97.51, 49.67, 50.54, 93.64, 74.30, 76.82, 63.32, 36.54, 90.87, 72.37, 61.98, 89.44, 98.19, 27.07, 63.97, 55.35, 92.40, 32.97, 61.37, 34.40, 42.48, 77.67, 99.31, 54.64, 69.46, 49.88, 86.76, 31.95, 4.55, 36.77, 36.91, 56.45, 54.44, 76.53, 15.97, 18.22, 41.34, 50.17, 18.82, 96.60, 93.58, 8.85, 30.27, 44.18, 26.85, 54.82, 64.24, 46.20, 3.00, 96.14, 10.01, 75.64, 93.18, 93.32, 15.88, 84.66, 21.08, 13.76, 75.89, 68.41, 51.36, 21.58, 13.85, 82.75, 71.88, 57.93, 6.68, 24.99, 10.24, 24.60, 95.14, 37.91, 97.11, 66.32, 87.91, 85.58, 64.32, 16.11, 37.22, 42.69, 89.64, 89.96, 48.29, 27.71, 89.71, 23.08, 53.02, 4.22, 18.84, 17.41, 73.05, 33.26, 71.83, 8.28, 69.65, 51.27, 75.61, 63.67, 8.24, 1.15, 83.05, 23.08, 26.37, 19.74, 34.79, 53.58, 66.88, 99.58, 63.30, 60.82, 43.71, 39.76, 54.97, 13.55, 81.42, 26.04, 2.18, 69.18, 36.76, 67.77, 40.94, 37.88, 6.44, 24.03, 31.21, 44.02, 50.53, 1.29, 78.89, 78.18, 41.64, 13.12, 60.07, 37.38, 7.18, 38.98, 75.08, 17.65, 11.13, 19.43, 44.85, 63.36, 68.78, 91.34, 71.68, 90.47, 82.64, 15.24, 24.96, 14.07, 1.79, 35.54, 62.56, 76.10, 7.22, 96.00, 49.04, 93.72, 41.35, 6.35, 31.58, 14.91, 46.10, 48.83, 25.15, 15.98, 18.06, 54.47, 88.50, 87.06, 16.53, 47.53, 46.51, 68.91, 28.35, 68.89, 93.41, 21.07, 25.42, 93.02, 94.64, 93.94, 9.75, 89.52, 1.20, 34.41, 65.48, 58.09, 32.27, 55.53, 22.79, 5.41, 87.13, 52.83, 14.59, 17.07, 29.37, 94.04, 24.53, 62.59, 58.07, 83.71, 86.55, 23.05,

34.52, 35.22, 50.84, 71.60, 27.66, 5.29, 72.83, 34.59, 68.72, 6.51, 29.91, 40.08, 45.36, 16.20, 1.91, 22.10, 86.63, 44.83, 6.13, 93.60, 73.23, 2.01, 5.79, 72.59, 94.20, 1.20, 91.42

1. The difference in arithmetic mean and median of the data in **scores** is

2. What is the relation between mean and median of data in **scores** ?

3. The difference between maximum quartile and third quartile of the data on **scores** is

4. The 5th and 6th deciles of the data in **scores** are

5. The 20th and 35th percentiles of the data in **scores** are

6. An examination declares a candidate to be admitted if the marks obtained are in the top 25 percentile. Candidate 1: 72, Candidate 2: 75, Candidate 3: 70, and Candidate 4: 78. Which of them will be admitted?

7. The harmonic mean of the data in **scores** is

8. The interquartile range and quartile deviation of the values of data in **scores**

9. The statistical range of the values of data in **scores** is