612303050 Deshmukh Mehmood Rehan’s Assignment 3

Q1. Find mean, median, mode, maximum, minimum and range of the data set {2.3, 4.4, 5, 5, 6, 6.5, 6.5, 6.5, 6.5, 8.6, 9.2, 4.4, 4.4, 5.4, 5, 2, 4.4}

data\_q1 = c(2.3, 4.4, 5, 5, 6, 6.5, 6.5, 6.5, 6.5, 8.6, 9.2, 4.4, 4.4, 5.4, 5, 2, 4.4)  
#mean  
mean\_q1 = mean(data\_q1)  
mean\_q1

## [1] 5.417647

#median  
median\_q1 = median(data\_q1)  
median\_q1

## [1] 5

#minimum  
minimum\_q1 = min(data\_q1)  
minimum\_q1

## [1] 2

#maximum  
maximum\_q1 = max(data\_q1)  
maximum\_q1

## [1] 9.2

#range  
range\_q1 = maximum\_q1 - minimum\_q1  
range\_q1

## [1] 7.2

#mode   
y\_q1 = table(data\_q1)  
y\_q1

## data\_q1  
## 2 2.3 4.4 5 5.4 6 6.5 8.6 9.2   
## 1 1 4 3 1 1 4 1 1

mode = names(y\_q1)[which(y\_q1 == max(y\_q1))]  
mode

## [1] "4.4" "6.5"

Q2. Print the sequence from 1 to 100 with an increment 0.01. Count length of the sequence. Also find mean, median, mode, quartiles and 80th percentile of the data formed.

data\_q2 = seq(1, 100, 0.01)  
#print sequence  
#print(data\_q2)  
#its too long to print so lets print head and tail  
print(head(data\_q2))

## [1] 1.00 1.01 1.02 1.03 1.04 1.05

print(tail(data\_q2))

## [1] 99.95 99.96 99.97 99.98 99.99 100.00

#length of sequence  
len\_data\_q2 = length(data\_q2)  
len\_data\_q2

## [1] 9901

#mean  
mean\_q2 = mean(data\_q2)  
mean\_q2

## [1] 50.5

#median  
median\_q2 = median(data\_q2)  
median\_q2

## [1] 50.5

#mode  
y\_q2 = table(data\_q2)  
mode = names(y\_q2)[which(y\_q2 == max(y\_q2))]  
#mode  
#mode is too long to print so lets print head and tails  
print(head(mode))

## [1] "1" "1.01" "1.02" "1.03" "1.04" "1.05"

print(tail(mode))

## [1] "99.95" "99.96" "99.97" "99.98" "99.99" "100"

#quartile  
quartile\_seq\_q2 = c(0.25, 0.5, 0.75)  
quartiles\_q2 = quantile(data\_q2, probs = quartile\_seq\_q2)  
quartiles\_q2

## 25% 50% 75%   
## 25.75 50.50 75.25

#80th percentile  
p80\_q2 = quantile(data\_q2, 0.8)  
p80\_q2

## 80%   
## 80.2

Q3. Consider eight hypothetical observations recorded under two different circumstances given as: v1 = {2.3, 5.4, 3.3, 4.2, 4.2, 7.9, 4.2, 9.8} and v2 = {4.3, 6.4, 8.3, 6.2, 6.2, 6.9, 6.2, 8.8}. Find variances and standard deviations of data sets v1 and v2.

v1\_q3 = c(2.3, 5.4, 3.3, 4.2, 4.2, 7.9, 4.2, 9.8)  
v2\_q3 = c(4.3, 6.4, 8.3, 6.2, 6.2, 6.9, 6.2, 8.8)  
#variance for v1  
var1\_q3 = var(v1\_q3)  
var1\_q3

## [1] 6.214107

#standard deviation for v1  
stddev1\_q3 = sqrt(var1\_q3)  
stddev1\_q3

## [1] 2.492811

#variance for v2  
var2\_q3 = var(v2\_q3)  
var2\_q3

## [1] 1.942679

#standard deviation for v2  
stddev2\_q3 = sqrt(var2\_q3)  
stddev2\_q3

## [1] 1.3938

Q4. Using R studio, find arithmetic mean of the following set of observations on the age of 10 people in complete years: 19, 15, 27, 28, 14, 9, 30, 29, 20, 25.

data\_q4 = c(19, 15, 27, 28, 14, 9, 30, 29, 20, 25)  
#arithmetic mean  
mean\_q4 = mean(data\_q4)  
mean\_q4

## [1] 21.6

Q5. Find mode of the following set of observations on the no. of courses passed by 10 students: 10, 7, 12, 8, 11, 10, 8, 6, 9, 10.

data\_q5 = c(10, 7, 12, 8, 11, 10, 8, 6, 9, 10)  
#mode  
y\_q5 = table(data\_q5)  
mode = names(y\_q5)[which(y\_q5 == max(y\_q5))]  
mode

## [1] "10"

Q6. Find median of the following set of observations: 23, 22, 30, 25, 21, 32, 26, 37, 40, 30, 29.

data\_q6 = c(23, 22, 30, 25, 21, 32, 26, 37, 40, 30, 29)  
#median  
median\_q6 = median(data\_q6)  
median\_q6

## [1] 29

Q7. Using built in data frame CO2, compute the mean,median,mode,10th decile, 30th percentile and Quartile deviation of all the uptakes variable.

# Load the CO2 dataset  
data(CO2)  
  
data\_q7 = CO2$uptake  
#mean  
mean\_q7 = mean(data\_q7)  
mean\_q7

## [1] 27.2131

#median  
median\_q7 = median(data\_q7)  
median\_q7

## [1] 28.3

#mode  
y\_q7 = table(data\_q7)  
mode = names(y\_q7)[which(y\_q7 == max(y\_q7))]  
mode

## [1] "17.9" "32.4"

#10th decile  
decile\_q7 = quantile(data\_q7, 0.1)  
decile\_q7

## 10%   
## 12.36

#30th percentile  
p30\_q7 = quantile(data\_q7, 0.3)  
p30\_q7

## 30%   
## 18.9

#quartile deviation  
quartile\_seq\_q7 = c(0.25, 0.5, 0.75)  
quartiles\_q7 = quantile(data\_q7, probs = quartile\_seq\_q7)  
quartile\_deviation\_q7 = (quartiles\_q7[3] - quartiles\_q7[1])/2  
quartile\_deviation\_q7

## 75%   
## 9.6125

Q8. Find the mean, median for the following data. Month 0 1 2 3 4 5 6 7 8 Persons 25 46 91 162 110 95 82 26 13

month\_q8 = c(0, 1, 2, 3, 4, 5, 6, 7, 8)  
persons\_q8 = c(25, 46, 91, 162, 110, 95, 82, 26, 13)  
  
data\_q8 = rep(month\_q8, persons\_q8)  
  
#mean  
mean\_q8 = mean(data\_q8)  
mean\_q8

## [1] 3.703077

#median  
median\_q8 = median(data\_q8)  
median\_q8

## [1] 4

Q9. The weekly wages(in Rs) of 10 unskilled workers are given below. 350,320,410,360,520,290,300,305,260,310. Find. 1.Range 2.Coefficient of Range. 3. Quartile Deviation. 4.Variance 5. Standard Deviation.

data\_q9 = c(350,320,410,360,520,290,300,305,260,310)  
#range  
range\_q9 = max(data\_q9) - min(data\_q9)  
range\_q9

## [1] 260

#coefficient of range  
coefficient\_of\_range\_q9 = (range\_q9/(max(data\_q9) + min(data\_q9)))\*100  
coefficient\_of\_range\_q9

## [1] 33.33333

#quartile deviation  
quartile\_seq\_q9 = c(0.25, 0.5, 0.75)  
quartiles\_q9 = quantile(data\_q9, probs = quartile\_seq\_q9)  
quartile\_deviation\_q9 = (quartiles\_q9[3] - quartiles\_q9[1])/2  
quartile\_deviation\_q9

## 75%   
## 28.125

#variance  
variance\_q9 = var(data\_q9)  
variance\_q9

## [1] 5640.278

#standard deviation  
stddev\_q9 = sqrt(variance\_q9)  
stddev\_q9

## [1] 75.10178

Q10. For the following frequency distribution x 1 2 3 4 5 f 7 11 9 8 3 Find 1.Mean 2. Median 3.Mode 4.Upper quartile 5.Seventh Decile 6.29th Percentile

x\_q10 = c(1, 2, 3, 4, 5)  
f\_q10 = c(7, 11, 9, 8, 3)  
  
data\_q10 = rep(x\_q10, f\_q10)  
  
#mean  
mean\_q10 = mean(data\_q10)  
mean\_q10

## [1] 2.710526

#median  
median\_q10 = median(data\_q10)  
median\_q10

## [1] 3

#mode  
y\_q10 = table(data\_q10)  
mode = names(y\_q10)[which(y\_q10 == max(y\_q10))]  
mode

## [1] "2"

#upper quartile  
upper\_quartile\_q10 = quantile(data\_q10, probs = 0.75)  
upper\_quartile\_q10

## 75%   
## 4

#seventh decile  
seventh\_decile\_q10 = quantile(data\_q10, 0.7)  
seventh\_decile\_q10

## 70%   
## 3

#29th percentile  
p29\_q10 = quantile(data\_q10, 0.29)  
p29\_q10

## 29%   
## 2