***PART 1***

mean(DF\_GSS2018$INCOME , na.rm = TRUE*) #CALCULATING MEAN OF INCOME VARIABLE*



**Mean = 67659.74**

median(DF\_GSS2018$INCOME , na.rm = TRUE) *#CALCULATING MEDIAN OF INCOME VARIABLE*

**Median = 55000.00**

library(moments) *#IMPORT moments LIBRARY*

skewness(DF\_GSS2018$INCOME, na.rm = TRUE) *#CALCULATING SKEWNESS OF INCOME VARIABLE*

**Skewness = 0.82**

hist(DF\_GSS2018$INCOME,main= paste("Historgram of Income"), xlab = "Income")  *#PLOT HISTOGRAM FOR INCOME VARIABLE*

Chart, bar chart, histogram

Description automatically generated

**Right Skewed**

range(DF\_GSS2018$INCOME, na.rm = TRUE) *#CALCULATING RANGE OF INCOME VARIABLE*

**Range = max – min = 180000 – 500 = 179500.00**

sd(DF\_GSS2018$INCOME, na.rm = TRUE) *#CALCULATING STANDARD DEVIATION OF INCOME VARIABLE*

**Standard Deviation = 51875.36**

***PART 2***

*#DATA*

Time <- c(90, 73, 86, 85, 80, 87, 90, 78, 84, 71, 72, 88, 85, 65)

Mark <- c(68, 65, 58, 94, 76, 91, 62, 81, 75, 83, 85, 74, 93, 89)

cor(Time,Mark) *#CALCULATING CORRELATION OF TIME AND MARK*

A picture containing graphical user interface

Description automatically generated

**Correlation = -0.295**

plot(Time, Mark, type = "p", lm(Time, Mark)) *#SCATTER PLOT*

Chart, scatter chart

Description automatically generated with medium confidence

**EXPLAINATION – The theory of professor is not correct because the realationship is moderate negative. Since it is not strongly negative we conclude that theory of professor is not correct**

***PART 3***

k <- seq(0,6)

df <- dbinom(k, size = 19, prob = 0.38) *#BINOMIAL DISTRIBUTION*

df

sum(df) *#SUM OF ALL PROBABILITIES FROM 0 TO 6*

Graphical user interface, text

Description automatically generated

P(X) = 0.38

n = 19

**P(X <= 6) = 0.3739**

***PART 4***

dbinom(9, size = 19, prob = 0.38) *#BINOMIAL DISTRIBUTION*

A picture containing graphical user interface

Description automatically generated

P(X) = 0.38

n = 19

**P(X = 9) = 0.1281**

***PART 4***

ppois(27,lambda = 33) *#POISSON DISTRIBUTION*

A picture containing graphical user interface

Description automatically generated

**P(X < 28) = 0.1695**

ppois(14,lambda = 12.8) *#POISSON DISTRIBUTION*

A picture containing logo

Description automatically generated

lambda = 16/100 \* 18

**P(X < 15) = 0.6954**

pnorm(11700, mean = 12500, sd = 820) *#NORMAL DISTRIBUTION*

A picture containing icon

Description automatically generated

**probability that the printer produces fewer than 11,700 pages = 0.1646**

qnorm(.03,mean = 12500, sd = 820) *#NORMAL DISTRIBUTION*

A picture containing icon

Description automatically generated

**Number of pages a cartridge will print that will be considered defective** **= 10958**

**PART 5**

*#Question 16*

library(readxl)

Cell\_phones\_1\_ <- read\_excel("Cell\_phones(1).xlsx")

cell\_time <- mean(Cell\_phones\_1\_$Time,na.rm = TRUE)

cell\_time

sample\_size <- 60

cell\_sd <- 78

sd\_error <- (cell\_sd/(sqrt(sample\_size)))

sd\_error

cell\_lb <- cell\_time - (qnorm(0.025, 0 , 1, FALSE)\*sd\_error)

cell\_lb

cell\_ub <- cell\_time + (qnorm(0.025, 0 , 1, FALSE)\*sd\_error)

cell\_ub

**Graphical user interface, text, application

Description automatically generated**

**LOWER BOUND = 1588.26**

**UPPER BOUND = 1627.74**

time\_lb <- cell\_time - (qnorm(0.005, 0 , 1, FALSE)\*sd\_error)

time\_lb

time\_ub <- cell\_time + (qnorm(0.005, 0 , 1, FALSE)\*sd\_error)

time\_ub

Graphical user interface, text, application

Description automatically generated

**LOWER BOUND = 1582.06**

**UPPER BOUND = 1633.94**

**PART 6**

H0 <= 22 ; Null Hypothesis

H1 > 22 ; Alternative Hypothesis

Mean = 23.67

Standard Deviation = 4

n = 15

Alpha or Significance level = 10% = 0.10

t–value = ((23.67 – 22)/(4/sqrt(15))) = 1.6169

*R code:*

*#Hypothesis Testing*

pt(1.6169,df = 14)

**Text

Description automatically generated**

**P–value = 0.936**

**Explanation:**

P-value (0.936) is greater than significance value (0.10), we will not reject the null hypothesis in favor of the alternative hypothesis. based on the evidence we can confirm that children are watching less than 22 hours of television.

**PART 7**

H0 <= 98 ; Null Hypothesis

H1 > 98 ; Alternative Hypothesis

Mean = 105.7 (From R code Calculation)

Standard Deviation = 27

n = 40

Alpha or Significance level = 5% = 0.05

t-value = ((105.7 – 98) / (27/sqrt(40))) = 1.803

*R code:*

*#Hypothesis Testing*

pt(1.6169,df = 14)

Graphical user interface

Description automatically generated with medium confidence

**P-value = 0.9604**

**Explanation:**

P-value (0.9604) is greater than the alpha or significance value (0.05), we will not reject the null hypothesis in favor of alternative hypothesis. Based on the evidence from the test we can confirm that there are no more than average of 98 pedestrians passing through this location per hour.