Assignment 8

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```
#Importing Data

#Importing the csv data
data<-read.csv("/Users/gurpreetsingh/Downloads/Clt-data.csv")


#Validate data for correctness
#Count of Rows and columns
dim(data)
```

```
## [1] 9000    1
```

```
#View top 10 rows of the dataset
head(data,10)
```

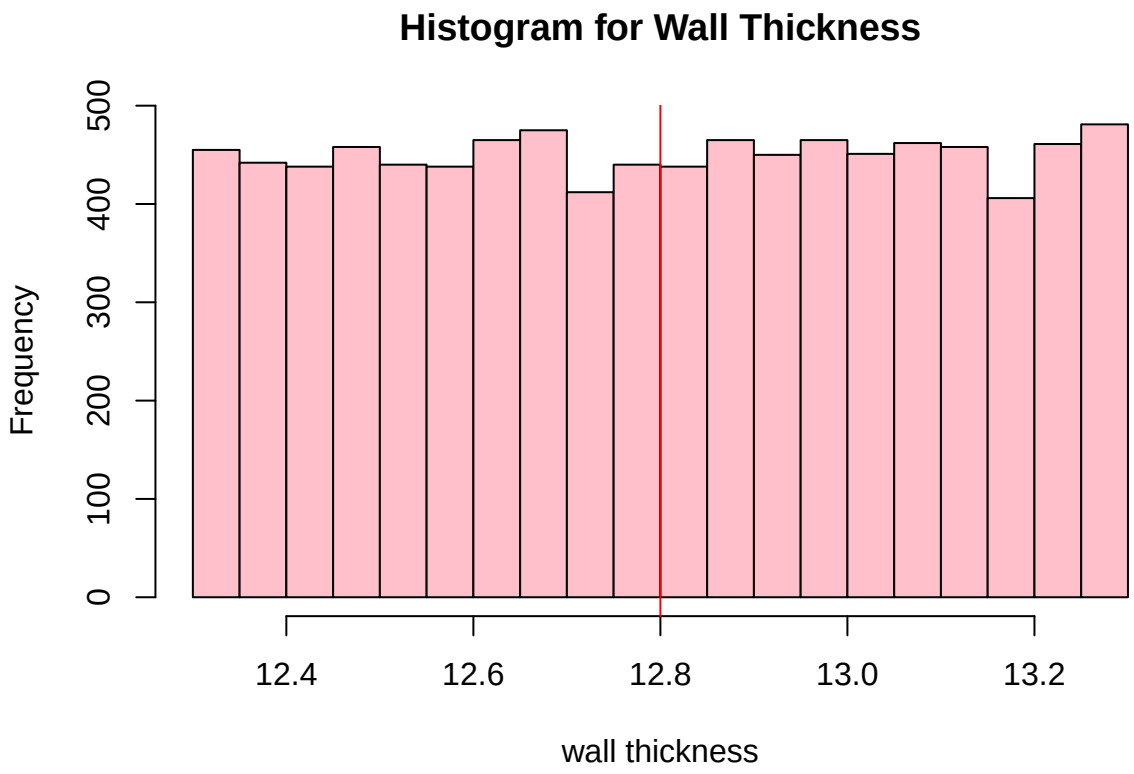
```
##    Wall.Thickness
## 1        12.35487
## 2        12.61742
## 3        12.36972
## 4        13.22335
## 5        13.15919
## 6        12.67549
## 7        12.36131
## 8        12.44468
## 9        12.62977
## 10       12.90381
```

```
#Calculate the population mean and plot the observations

#Calculate the population mean
mean(data$Wall.Thickness)
```

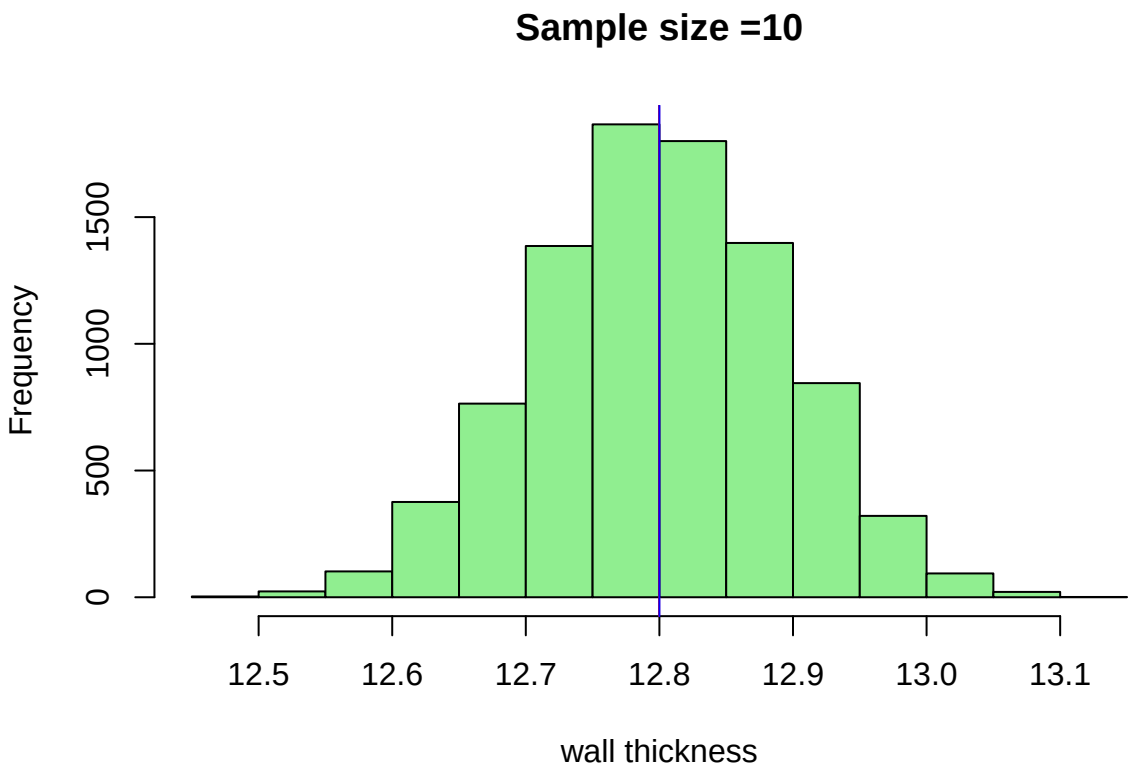
```
## [1] 12.80205
```

```
#Plotting all the observations in the data
hist(data$Wall.Thickness,col = "pink",main = "Histogram for Wall Thickness",xlab = "wall thickness")
abline(v=12.8,col="red",lty=1)
```




```
#We will take sample size=10, samples=9000
#Calculate the arithmetice mean and plot the mean of sample 9000 times

s10<-c()
n=9000
for (i in 1:n) {
  s10[i] = mean(sample(data$Wall.Thickness,10, replace = TRUE))}
hist(s10, col ="lightgreen", main="Sample size =10",xlab = "wall thickness")
abline(v = mean(s10), col = "Red")
abline(v = 12.8, col = "blue")
```

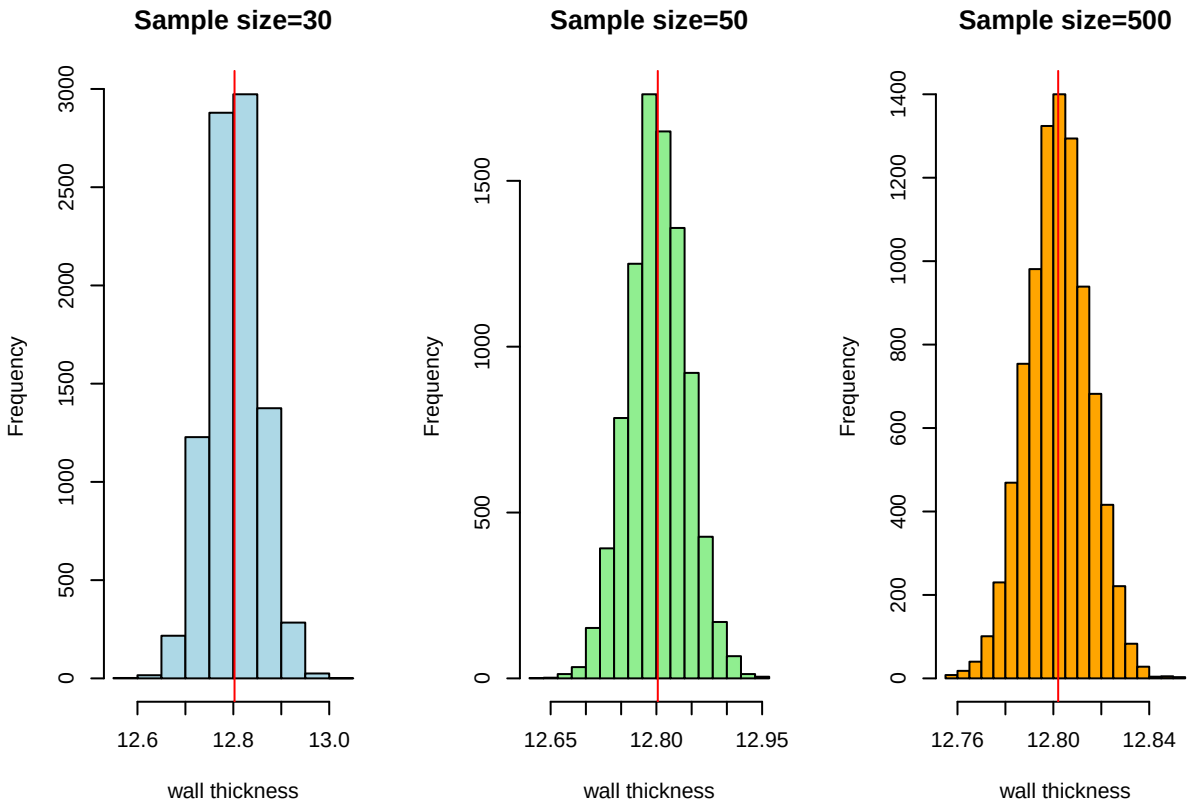



```
#We will take sample size=30, 50 & 500 samples=9000
#Calculate the arithmetice mean and plot the mean of sample 9000 times

s30 <- c()
s50 <- c()
s500 <- c()
n =9000
for ( i in 1:n){
  s30[i] = mean(sample(data$Wall.Thickness,30, replace = TRUE))
  s50[i] = mean(sample(data$Wall.Thickness,50, replace = TRUE))
  s500[i] = mean(sample(data$Wall.Thickness,500, replace = TRUE))
}
par(mfrow=c(1,3))
hist(s30, col ="lightblue",main="Sample size=30",xlab ="wall thickness")
abline(v = mean(s30), col = "red")

hist(s50, col ="lightgreen", main="Sample size=50",xlab ="wall thickness")
abline(v = mean(s50), col = "red")

hist(s500, col ="orange",main="Sample size=500",xlab ="wall thickness")
abline(v = mean(s500), col = "red")
```


Sample size=30
Frequency
0
500
1000
1500
2000
2500
3000
12.6
12.8
13.0
wall thickness
Sample size=50
Frequency
0
500
1000
1500
12.65
12.80
12.95
wall thickness
Sample size=500
Frequency
0
200
400
600
800
1000
1200
1400
12.76
12.80
12.84
wall thickness