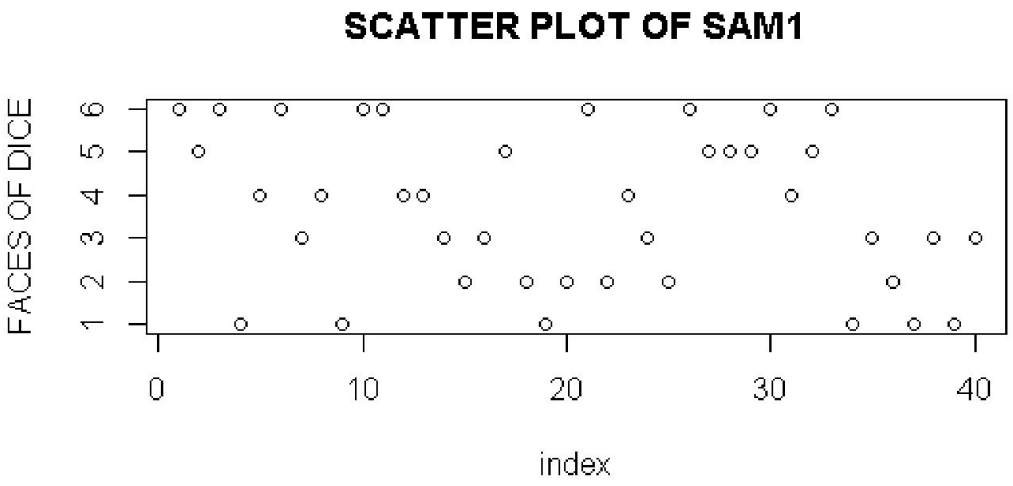
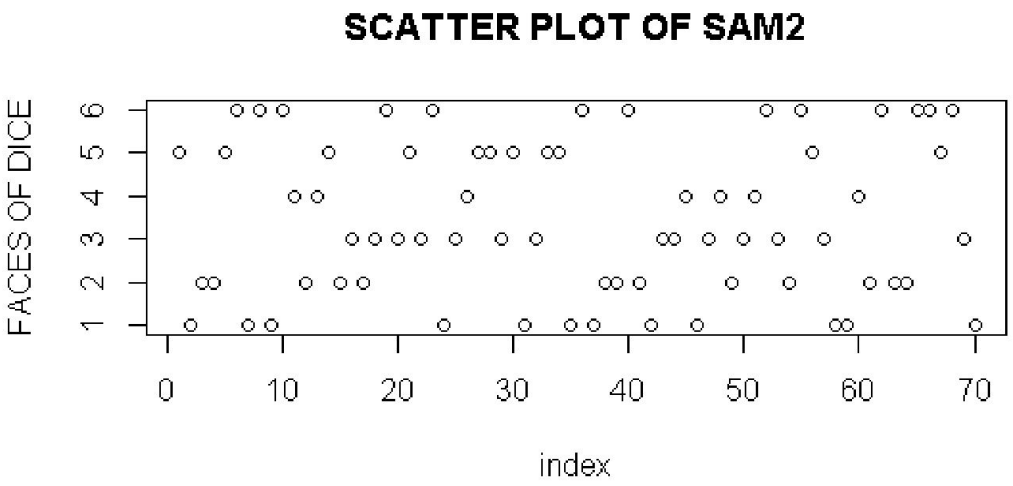
Q15. Create a scatter plot to represent frequency distribution of samples generates in Q 13. Add simple adornments.

Ans:

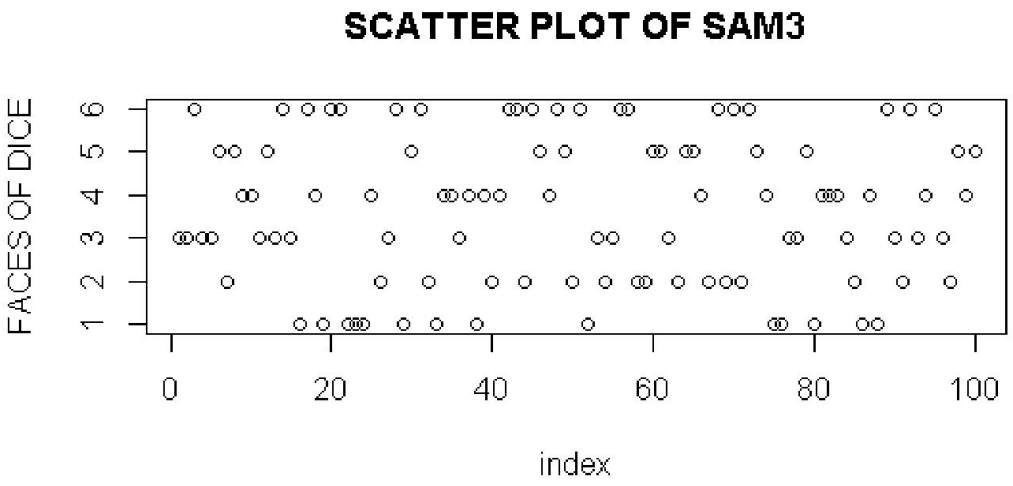
```
> sam1<-sample(1:6,40,replace = TRUE)
> sam1
 [1] 6 5 6 1 4 6 3 4 1 6 6 4 4 3 2 3 5 2 1 2 6 2 4 3 2 6 5 5 5 6 4 5 6 1 3 2 1 3 1 3
> sam2<-sample(1:6,70,replace = TRUE)
> sam2
 [1] 5 1 2 2 5 6 1 6 1 6 4 2 4 5 2 3 2 3 6 3 5 3 6 1 3 4 5 5 3 5 1 3 5 5 1 6 1 2 2 6 2 1 3
[44] 3 4 1 3 4 2 3 4 6 3 2 6 5 3 1 1 4 2 6 2 2 6 6 5 6 3 1
> sam3<-sample(1:6,100,replace = TRUE)
> sam3
  [1] 3 3 6 3 3 5 2 5 4 4 3 5 3 6 3 1 6 4 1 6 6 1 1 1 4 2 3 6 1 5 6 2 1 4 4 3 4 1 4 2 4 6
 [43] 6 2 6 5 4 6 5 2 6 1 3 2 3 6 6 2 2 5 5 3 2 5 5 4 2 6 2 6 2 6 5 4 1 1 3 3 5 1 4 4 4 3
 [85] 2 1 4 1 6 3 2 6 3 4 6 3 2 5 4 5
> t1<-table(sam1)
> t2<-table(sam2)
> t3<-table(sam3)
> rel1<-rank(t1)/length(t1)
> rel2<-rank(t2)/length(t2)
> rel3<-rank(t3)/length(t3)
> rel1
      1       2       3       4       5       6
0.4166667 0.4166667 0.8333333 0.4166667 0.4166667 1.0000000
> rel2
      1       2       3       4       5       6
0.5000000 0.7500000 1.0000000 0.1666667 0.3333333 0.7500000
> rel3
  1   2   3   4   5   6
0.25 0.50 0.75 0.75 0.25 1.00
> plot(sam1,main = "SCATTER PLOT OF SAM1" ,xlab = "index",ylab = "FACES OF DICE")
```



> plot(sam2,main = "SCATTER PLOT OF SAM2" ,xlab = "index",ylab = "FACES OF DICE")

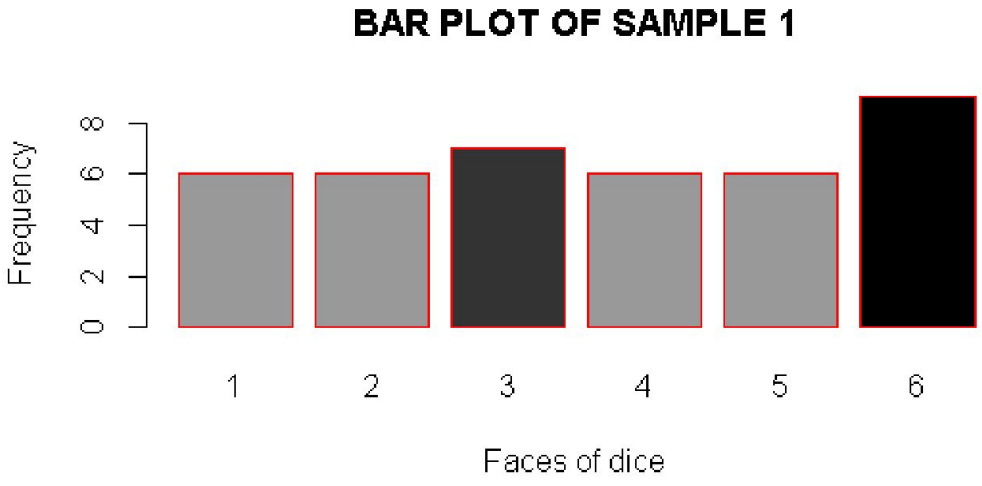


> plot(sam3,main = "SCATTER PLOT OF SAM3" ,xlab = "index",ylab = "FACES OF DICE")

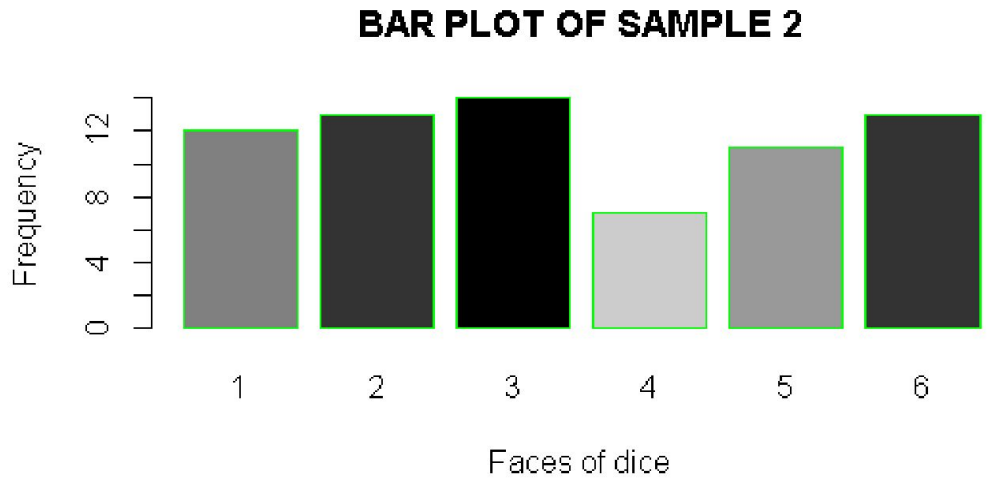


Q16. Create bar chart for frequency distribution obtained in Q 13. Add simple adornments. Apply
grayscale color shading scheme to reflect frequencies.
ANS:

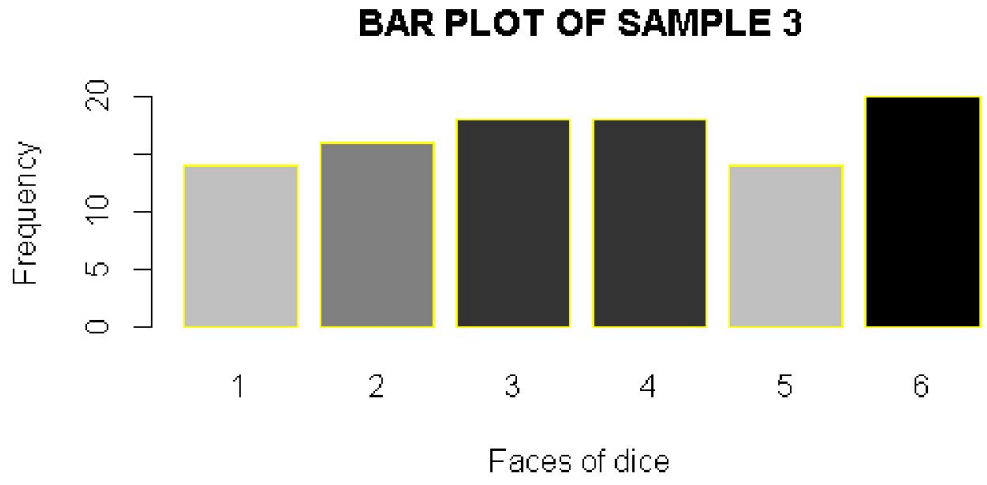
> barplot(t1, main = "BAR PLOT OF SAMPLE 1", xlab = "Faces of dice", ylab = "Frequency", border = "Red", col = gray(1-rel1))



> barplot(t2, main = "BAR PLOT OF SAMPLE 2", xlab = "Faces of dice", ylab = "Frequency", border = "GReen", col = gray(1-rel2))



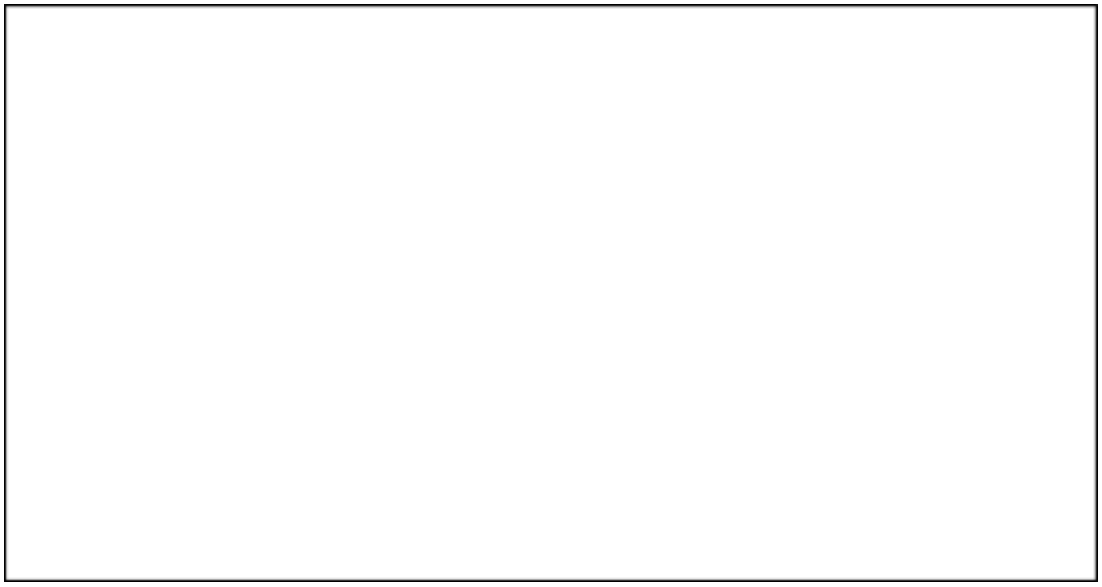
> barplot(t3, main = "BAR PLOT OF SAMPLE 3", xlab = "Faces of dice", ylab = "Frequency", border = "yellow", col = gray(1-rel3))

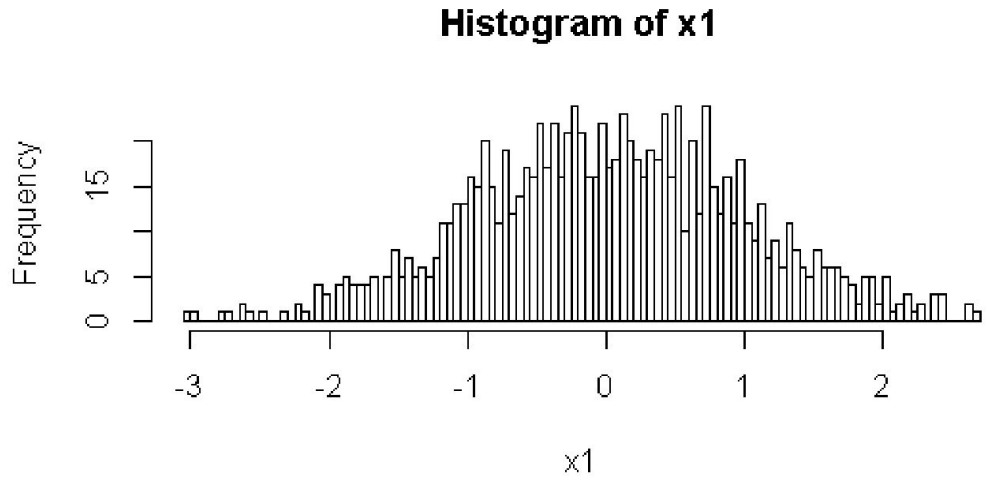


Q. Draw a sample of 1000 observations from a standard normal distribution and plot a histogram of the observations with 100 bins (cells). Now draw 10000 observations and plot a histogram with 100 bins. What do you notice as you increase the sample size?

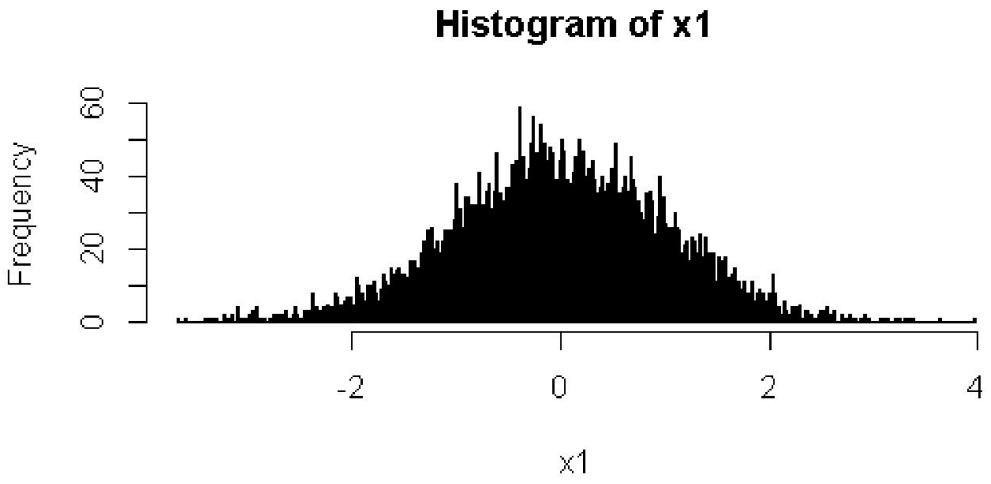
ANS:

> x1<-rnorm(1000,mean = 0,sd = 1)
> hist(x1,100)






```
> x1<-rnorm(10000,mean = 0,sd = 1)
> hist(x1,1000)
```



From the Above Two Histograms We Noticed That If We Increase The Bin Size the sample tends towards normal distribution