

Problem Set=6 (Answers)

Q.1) IQ is a normal distribution of mean of 100 and standard deviation of 15

(a) What percentage of people have an IQ < 125?

Ans > `x=pnorm(125,100,15,lower.tail=TRUE)`

> x

[1] 0.9522096

> `x*100`

[1] 95.22096

(b) What percentage of people have an IQ > 110?

Ans > `x=pnorm(110,100,15,lower.tail=FALSE)`

> x

[1] 0.2524925

> `x*100`

[1] 25.24925

(c) What percentage of people have  $110 < \text{IQ} < 125$ ?

Ans > `x=pnorm(110,100,15,lower.tail=TRUE)`

> x

[1] 0.7475075

> `x*100`

[1] 74.75075

(d) Find 25% for standard normal distribution.

Ans > `qnorm(0.25,mean=0,sd=1,lower.tail=TRUE)`

[1] -0.6744898

(e) Find 25% normal distribution with mean and standard deviation 2&3.

Ans > `qnorm(0.25,mean=2,sd=2,lower.tail=TRUE)`

[1] 0.6510205

(f) What IQ separates the lower 25% from the others?

Ans > `qnorm(0.25,mean=100,sd=15,lower.tail=TRUE)`

[1] 89.88265

(g) What IQ separates the top 25% from the others?

Ans > `qnorm(0.25,mean=100,sd=15,lower.tail=FALSE)`

[1] 110.1173

(h) Find 25 percentile for mean 100 and SD 15.

Ans > `qnorm(0.25,mean=100,sd=15,lower.tail=FALSE)`

[1] 110.1173

Q.2) Generate the 20 random number for a normal distribution with mean 572 and SD is 51.

Calculate mean and SD of data set.

> `RandomData=rnorm(20,mean=572,sd=51)`

> `mean(RandomData)`

[1] 570.8001

> `sd(RandomData)`

[1] 39.81884

> `RandomData<-rnorm(20,mean=572,sd=51)`

> `mean(RandomData)`

[1] 578.7784

> `RandomData<-rnorm(20,mean=572,sd=51)`

> `mean(RandomData)`

[1] 584.0696

> `sd(RandomData)`

[1] 68.1673

Q.3) Make appropriate histogram of data in above question and visually assume if normal density curve & histogram density estimates are similar.

> `std=sd(RandomData)`

> `m=mean(RandomData)`

> `hist(RandomData,xlab="Data from Normal Distribution",  
freq=FALSE,main="Histogram with Normal Curve")`

