**Q. The maximum weight that an elevator in an apartment complex can accommodate is 800kg. The average adult weight be about 70 kgs with a variance of 200. What is the probability that the lift safely reaches the ground when there are 10 adults in the lift. What if there are 12 adults?**

**Sol.**

The maximum weight that an elevator in an apartment complex can accommodate=800kg

Considering n=10, mean= 70 kgs , variance = 200, sd=14.14

So,

Using R

Applying Normal distribution

New mean=70\*10 and standard deviation=sqrt(10)\*14.14

> z\_10=(800-(10\*70))/(sqrt(10)\*14.14)

> z\_10

[1] 2.236406

> p\_10=1-pnorm(q=z)

> p\_10

[1] 0.7929272

New mean=70\*12 and standard deviation=sqrt(12)\*14.14

> z\_12=(800-(12\*70))/(sqrt(12)\*14.14)

> z\_12

[1] -0.8166199

> p\_12=pnorm(q=z)

> p\_12

[1] 0.2070728

**Ans.** The probability that the lift safely reaches the ground when there are 10 adults in lift is 79.29%

The probability that the lift safely reaches the ground when there are 12 adults in lift is 20.7%