**Problem Statement 1:**

Calculate F Test for given 10, 20, 30, 40, 50 and 5, 10, 15, 20, 25.

For 10, 20, 30, 40, 50:

**Solution**

Calculate Variance of first set

Total Inputs (N) =(10,20,30,40,50)

Total Inputs (N)=5

Mean (xm)= (x1+x1+x2...xn)/N

Mean (xm)= 150/5

Means(xm)= 30

SD=sqrt(1/(N-1)\*((x1-xm)2+(x2-xm)2+..+(xn-xm)2))

=sqrt(1/(5-1)((10-30)2+(20-30)2+(30-30)2+(40-30)2+(50-30)2))

=sqrt(1/4((-20)2+(-10)2+(0)2+(10)2+(20)2))

=sqrt(1/4((400)+(100)+(0)+(100)+(400)))

=sqrt(250)

=15.8114

Variance=SD2

Variance=15.81142

Variance=250

Calculate Variance of second set

For 5, 10,15,20,25:

Total Inputs(N) =(5,10,15,20,25)

Total Inputs(N)=5

Mean (xm)= (x1+x2+x3...xN)/N

Mean (xm)= 75/5

Means (xm)= 15

SD=sqrt(1/(N-1)\*((x1-xm)2+(x2-xm)2+..+(xn-xm)2))

=sqrt(1/(5-1)((5-15)2+(10-15)2+(15-15)2+(20-15)2+(25-15)2))

=sqrt(1/4((-10)2+(-5)2+(0)2+(5)2+(10)2))

=sqrt(1/4((100)+(25)+(0)+(25)+(100)))

=sqrt(62.5)

=7.9057

Variance=SD2

Variance=7.90572

Variance=62.5

To calculate F Test

F Test = (variance of 10, 20,30,40,50) / (variance of 5, 10, 15, 20, 25)

= 250/62.5

= 4.

The F Test value is 4.