

<品質管理1>

常態分布図

左側にかかれた計算式と、次のページの計算式を実行すると、右のような計算結果になります。

Sheet1

	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	Mean	Sigma
Y1	3.95	4.64	3.81	3.40	3.80	3.57	3.35	4.02	3.50	3.74		
Y2	3.27	3.22	4.16	3.15	4.03	4.00	3.74	3.99	3.72	3.71		
mean												

Mean	Sigma
3.778	0.377
3.699	0.367
3.739	0.372

N=20 実行前

MIN(A)=

MAX(A)=

R=MAX(A)-MIN(A)=

K=7

H=R/K=

N=20 再実行後

MIN(A)=3.15

MAX(A)=4.64

R=MAX(A)-MIN(A)=1.49

K=7

H=R/K=0.213

組別	下限	上限	f(pcs)	u	uf
01X					
02X					
03X					
04X					
05X					
06X					
07X					
08X					
09X					
TOTAL					

組別	下限	上限	f(pcs)	u	uf
01X	3.15	3.36	4		
02X	3.36	3.58	3		
03X	3.58	3.79	4		
04X	3.79	4.00	5		
05X	4.00	4.22	3		
06X	4.22	4.43	0		
07X	4.43	4.64	1		
08X					
09X					
TOTAL			20		

	f
01X	
02X	
03X	
04X	
05X	
06X	
07X	

	f
01X	****
02X	***
03X	****
04X	*****
05X	***
06X	
07X	*

規格下限 **SL=3**

平均 $\chi = \text{Sheet1}_{\text{DataIndexC}+2,2+\text{DataIndexR}} = 3.739$

標準差 $\sigma = \text{Sheet1}_{\text{DataIndexC}+3,2+\text{DataIndexR}} = 0.372$

規格下限 **SL=3**

平均 $\chi = \text{Sheet1}_{\text{DataIndexC}+2,2+\text{DataIndexR}} = 3.739$

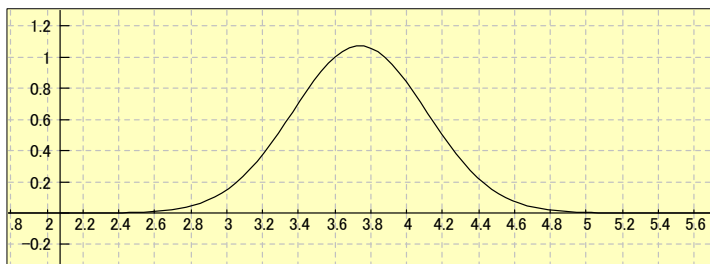
標準差 $\sigma = \text{Sheet1}_{\text{DataIndexC}+3,2+\text{DataIndexR}} = 0.372$

$$Cpk = \frac{\chi - SL}{3\sigma} = \frac{3.739 - 3}{3 \times 0.372} =$$

$$Cpk = \frac{\chi - SL}{3\sigma} = \frac{3.739 - 3}{3 \times 0.372} = 0.662$$

$$f(x) = \frac{1}{\sqrt{2\pi}\sigma} e^{\left\{ \frac{-(x-\chi)^2}{2\sigma^2} \right\}}$$

$$f(x) = \frac{1}{\sqrt{2\pi}\sigma} e^{\left\{ \frac{-(x-\chi)^2}{2\sigma^2} \right\}}$$



<品質管理2>

カルキングで作成した常態分布図のプログラム

```
DataIndexC=table_column(Sheet1)-4
table_row(Sheet1)=8
DataIndexC=10
```

```
DataIndexR=2
table_column(Sheet1)=14
DataIndexR=2
```

```
A1..20=0
```

```
( for k = 1 to 10 step 1 )
  Ak=Sheet1k+1,2
( for k = 11 to 20 step 1 )
  Ak=Sheet1k+1-10,3
```

```
A={ 3.95, 4.64, 3.81, 3.4, 3.8, 3.57, 3.35, 4.02, 3.5, 3.74, 3.27, 3.22, 4.16, 3.15, 4.03, 4, 3.74, 3.99, 3.72, 3.71 }
```

```
( for k = 2 to 2+DataIndexR-1 step 1 )
  Sheet1DataIndexC+2,k =  $\frac{\sum_{i=1}^{DataIndexC} Sheet1_{1+i,k}}{DataIndexC}$  Calculation of Mean
  Sheet1DataIndexC+3,k =  $\sqrt{\frac{\sum_{i=1}^{DataIndexC} (Sheet1_{1+i,k} - Sheet1_{DataIndexC+2,k})^2}{DataIndexC-1}}$  Calculation of Sigma
  Sheet1DataIndexC+2,2+DataIndexR =  $\frac{\sum_{i=1}^{DataIndexR} Sheet1_{DataIndexC+2,2+i-1}}{DataIndexR}$  Mean of Mean
  Sheet1DataIndexC+3,2+DataIndexR =  $\frac{\sum_{i=1}^{DataIndexR} Sheet1_{DataIndexC+3,2+i-1}}{DataIndexR}$  Mean of Sigma
```

```
( for k = 1 to 7 step 1 ) for making 上限 and 下限 data
  Sheet22,1+k = 3.15+(k-1)H
  Sheet23,1+k = 3.15+kH
```

```
x1=0      x2=0      x3=0      x4=0      x5=0      x6=0      x7=0
```

```
( for k = 1 to 20 step 1 )
  { x1=x1+1    Ak≤Sheet23,2
    x2=x2+1    Sheet23,2<Ak≤Sheet23,3
    x3=x3+1    Sheet23,3<Ak≤Sheet23,4
    x4=x4+1    Sheet23,4<Ak≤Sheet23,5 Count each areas
    x5=x5+1    Sheet23,5<Ak≤Sheet23,6
    x6=x6+1    Sheet23,6<Ak≤Sheet23,7
    x7=x7+1    Sheet23,7<Ak≤Sheet23,8
  }
  Sheet24,2=x1 Set f
  Sheet24,3=x2
  Sheet24,4=x3
  Sheet24,5=x4
  Sheet24,6=x5
  Sheet24,7=x6
  Sheet24,8=x7
  Sheet32,2=|x1*"*"| Draw Histogram
  Sheet32,3=|x2*"*"|
  Sheet32,4=|x3*"*"|
  Sheet32,5=|x4*"*"|
  Sheet32,6=|x5*"*"|
  Sheet32,7=|x6*"*"|
  Sheet32,8=|x7*"*"|
  Sheet24,11=x1+x2+x3+x4+x5+x6+x7
```