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REG NUM : 20BPS1111

DATE : 25.01.2022

SLOT : L37+L38

LAB WEEK – 3 ASSESSMENT

1)

AIM:

To write a R code to find the coefficient of variation for both the products and print the stable value

BASIC SYNTAX:

No. of elements = length()

Mean = mean()

Square Root = sqrt()

Printing statement = print()

CODE:

```
p_a=c(20,22,19,23,16)
p_b=c(10,20,18,12,15)
la=length(p_a)
a=(p_a-mean(p_a))^2
sd_a=sqrt(sum(a)/la)
cv_a=(sd_a/mean(p_a))*100
cv_a
lb=length(p_b)
b=(p_b-mean(p_b))^2
sd_b=sqrt(sum(b)/la)
cv_b=(sd_b/mean(p_b))*100
cv_b
if(cv_a<cv_b)
{
  print("Product A is more stable in prices")
```

```
} else
{
  print("Product B is more stable in prices")
}
```

OUTPUT:

ENVIRONMENT WINDOW

Values	
a	num [1:5] 0 4 1 9 16
b	num [1:5] 25 25 9 9 0
cv_a	12.2474487139159
cv_b	24.5854518861144
la	5L
lb	5L
p_a	num [1:5] 20 22 19 23 16
p_b	num [1:5] 10 20 18 12 15
sd_a	2.44948974278318
sd_b	3.68781778291716

COMMAND WINDOW

```
> if(cv_a<cv_b)
+ {
+   print("Product A is more stable in prices")
+ } else
+ {
+   print("Product B is more stable in prices")
+ }
[1] "Product A is more stable in prices"
>
```

2)

AIM:

To write a R code to find the arithmetic means using the given set of data

BASIC SYNTAX:

Printing Statement = sprintf()

CODE:

```
cv1=58;
sd1=21.2;
cv2=69;
sd2=15.6;
m1=(sd1/cv1)*100;
m2=(sd2/cv2)*100;
sprintf("The Arithmetic Means are %.3f and %.3f",m1,m2)
```

OUTPUT:

ENVIRONMENT WINDOW

Values	
cv1	58
cv2	69
m1	36.551724137931
m2	22.6086956521739
sd1	21.2
sd2	15.6

COMMAND WINDOW

```
> cv1=58;
> sd1=21.2;
> cv2=69;
> sd2=15.6;
> m1=(sd1/cv1)*100;
> m2=(sd2/cv2)*100;
> sprintf("The Arithmetic Means are %.3f and %.3f",m1,m2)
[1] "The Arithmetic Means are 36.552 and 22.609"
>
```

3)

AIM:

To write a R code to find out the combined standard deviation using the given set of data

BASIC SYNTAX:

Printing Statement = sprintf()

CODE:

```
n1=40
n2=50
m=53
sd1=19
sd2=18
x12=(n1*m+n2*m)/(n1+n2)
d1=m-x12
d2=m-x12
num=n1*sd1^2+n2*sd2^2+n1*d1^2+n2*d2^2
deno=n1+n2
ans=sqrt(num/deno)
sprintf("The Combined Standard Deviation is %.3f",ans)
```

OUTPUT:

ENVIRONMENT WINDOW

Values	
ans	18.4511366707974
d1	0
d2	0
deno	90
m	53
n1	40
n2	50
num	30640
sd1	19
sd2	18
x12	53

COMMAND WINDOW

```
> n1=40
> n2=50
> m=53
> sd1=19
> sd2=18
> x12=(n1*m+n2*m)/(n1+n2)
> d1=m-x12
> d2=m-x12
> num=n1*sd1^2+n2*sd2^2+n1*d1^2+n2*d2^2
> deno=n1+n2
> ans=sqrt(num/deno)
> sprintf("The Combined Standard Deviation is %.3f",ans)
[1] "The Combined Standard Deviation is 18.451"
```

4)

AIM:

To write a R code to find out the correct mean, correct standard deviation and the correct coefficient of variation

BASIC SYNTAX:

Printing Statement = sprintf()

CODE:

```
n=200
m1=60
sd1=20
incorrect_total=m1*n
correct_total=incorrect_total+13+17-3-67
correct_mean=correct_total/n
incorrect_x2=(sd1^2+m1^2)*n
correct_x2=incorrect_x2-(70^2)+(30^2)
sd2=sqrt((correct_x2/n)-(correct_mean^2))
cv=(sd2/correct_mean)*100
sprintf("The correct mean is %.2f",correct_mean)
sprintf("The correct standard deviation is %.3f",sd2)
sprintf("The correct coefficient of variation is %.3f",cv)
```

OUTPUT:

ENVIRONMENT WINDOW

```
Values
  correct_mean        59.8
  correct_total       11960
  correct_x2          796000
  cv                  33.6099601679276
  incorrect_total     12000
  incorrect_x2        8e+05
  m1                  60
  n                   200
  sd1                 20
  sd2                 20.0987561804207
```

COMMAND WINDOW

```
> n=200
> m1=60
> sd1=20
> incorrect_total=m1*n
> correct_total=incorrect_total+13+17-3-67
> correct_mean=correct_total/n
> incorrect_x2=(sd1^2+m1^2)*n
> correct_x2=incorrect_x2-(70^2)+(30^2)
> sd2=sqrt((correct_x2/n)-(correct_mean^2))
> cv=(sd2/correct_mean)*100
> sprintf("The correct mean is %.2f",correct_mean)
[1] "The correct mean is 59.80"
> sprintf("The correct standard deviation is %.3f",sd2)
[1] "The correct standard deviation is 20.099"
> sprintf("The correct coefficient of variation is %.3f",cv)
[1] "The correct coefficient of variation is 33.610"
>
```