Experiment 3

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1. Aim: To calculate Karl Pearson and Spearman's correlation coefficients and to draw scatter plot for given data.

Calculations:

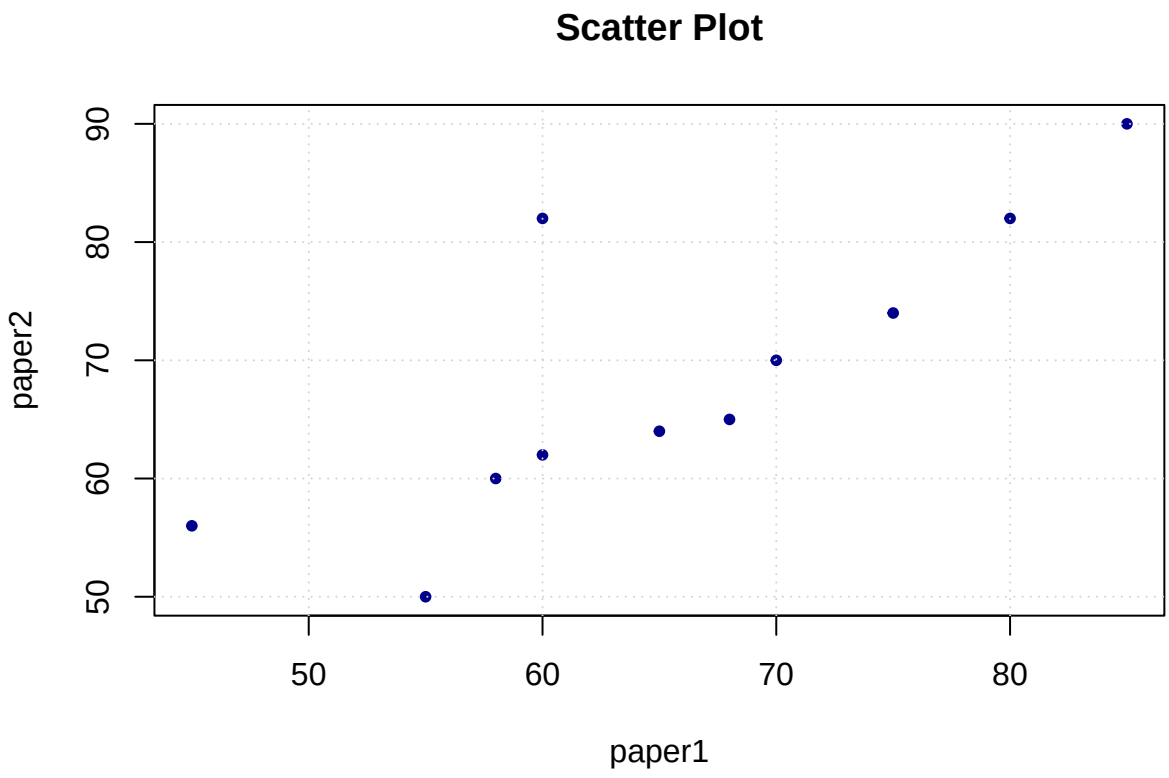
```
paper1 = c(45,55,60,58,60,65,68,70,75,80,85)
paper2 = c(56,50,82,60,62,64,65,70,74,82,90)
cor(paper1,paper2,method="pearson")  #Karl Pearson correlation coefficient
```

```
## [1] 0.8007311
```

```
cor(paper1,paper2,method="spearman")  #Spearman's rank correlation coefficient
```

```
## [1] 0.8561644
```

```
plot(paper1,paper2, main = "Scatter Plot", col="blue4",pch=20)
grid()
```



3. Aim: To find regression equation, create scatter plot and other computations using R

Calculations:

```
x = c(39,65,62,90,82,75,25,98,36,78)
y = c(47,53,58,86,62,68,60,91,51,84)
#(a) To Find the regression equation of sales on advertisement expenses.
yonx = lm(y~x)
summary(yonx)
```

```
##
## Call:
## lm(formula = y ~ x)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -13.000  -6.367  -1.741   8.221  14.037
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)  33.4398     9.7948   3.414  0.00917 **
## x             0.5009     0.1419   3.530  0.00773 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 10.43 on 8 degrees of freedom
## Multiple R-squared:  0.609,  Adjusted R-squared:  0.5602
## F-statistic: 12.46 on 1 and 8 DF,  p-value: 0.00773
```

```
coef(yonx)
```

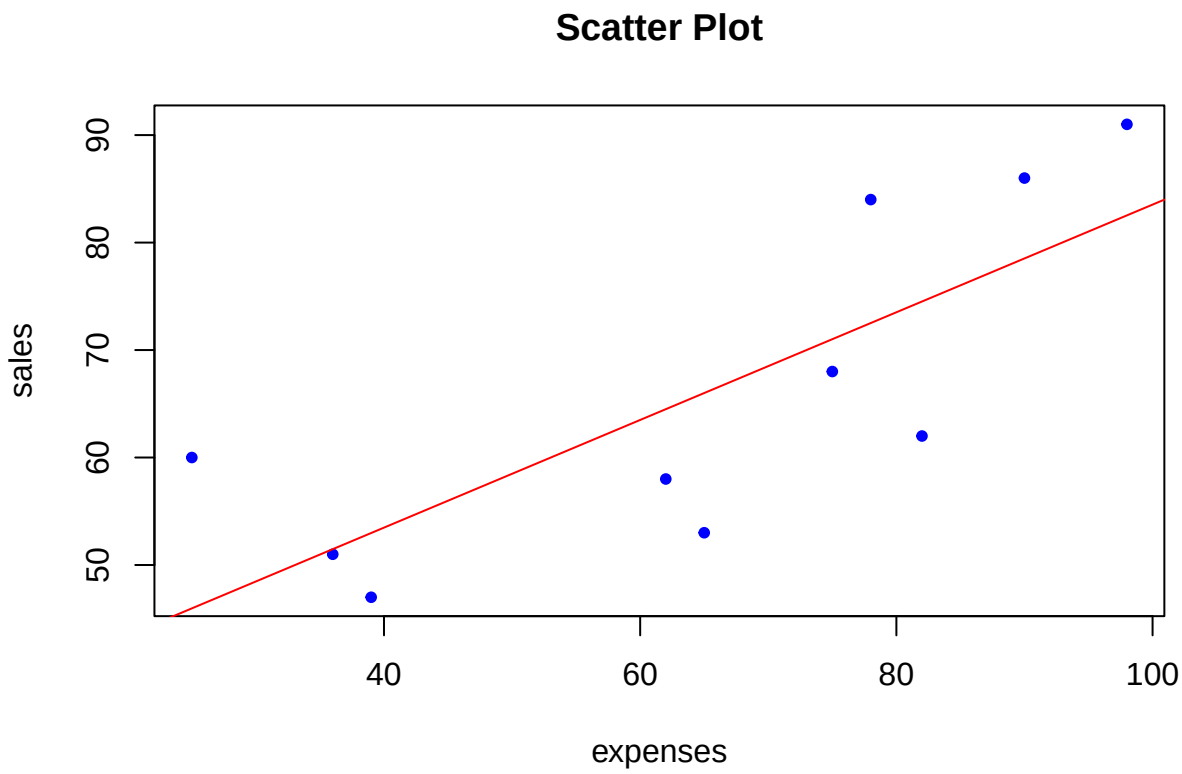
```
## (Intercept)           x
##  33.4397925   0.5009263
```

Hence, regression equation is $Y = 33.4397925 + 0.5009263 * x$

```
#(b) To Calculate the sales when an advertisement expense is 25.
yat25 = 33.4397925+0.5009263*25 # Sales when expenditure is 25
yat25
```

```
## [1] 45.96295
```

```
#(c) Draw a scatter plot along with regression line.
plot(x,y, main="Scatter Plot", xlab="expenses", ylab="sales",col="blue",pch=20)
abline(33.4397925,0.5009263,col="red") #or abline(yonx)
```


Scatter Plot
sales
50
60
70
80
90
40
60
80
100
expenses

4. Aim: To calculate BMI using R

Calculations:

```
wt = c(60,72,57,90,85)
ht = c(1.75,1.80,1.65,1.90,1.85)
bmi = wt/ht^2
bmi
```

```
## [1] 19.59184 22.22222 20.93664 24.93075 24.83565
```

5. Aim: To generate sequences using R

Calculations:

```
#(i) To Generate a sequence from 1 to 20.
1:20
```

```
##  [1]  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20
```

```
#(ii) To Generate a sequence from 1 to 40 with increment of 2.
seq(1,40,2)
```

```
##  [1]  1  3  5  7  9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39
```

```
#(iii) To Generate a sequence from 1 to 20 and then 30 to 40.
c(1:20,30:40)
```

```
##  [1]  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20 30 31 32 33 34
## [26] 35 36 37 38 39 40
```