

```

# Input the data of  $x_i$  and  $y_i$ 
x <- c(0, 10, 20, 30, 40, 50, 60)
y <- c(16, 27, 28, 39, 39, 48, 51)

# Calculate the value
avg_x <- sum(x)/ length(x)
avg_y <- sum(y)/ length(y)

Sxx <- sum((x-avg_x)^2)
Syy <- sum((y-avg_y)^2)
Sxy <- sum((x-avg_x)*(y-avg_y))

# Get the  $b_0$ ,  $b_1$ 
b1 <- Sxy / Sxx
b0 <- avg_y - b1*avg_x

# Output the result
result <- matrix(c(avg_x, avg_y, Sxx, Syy, Sxy, b0, b1), nrow <- 1, ncol = 7, dimnames = list(c("Value"),
c("avg_x", "avg_y", "ssxx", "ssyy", "ssxy", "b0", "b1")))
#result[1,1] <- avg_x
#result[1,2] <- avg_y
#result[1,3] <- Sxx
#result[1,4] <- Syy
#result[1,5] <- Sxy
#result[1,6] <- b0
#result[1,7] <- b1
result
|
yi_h = b1*x + b0
residual = y - yi_h
residual
# Plot the graphic,  $y = b_0 + b_1x$ 
plot(x,y, type = "p", main = "The time spent going to school and time away from home after 7 am", col="blue",
xlab = "Time away from home after 7 am", ylab = "The time spent going to school")
abline(a=b0, b=b1, col="red", lwd=2)

```

```

1 # Input the data of xi and yi
2 x <- c(0, 10, 20, 30, 40, 50, 60)
3 y <- c(16, 27, 28, 39, 39, 48, 51)
4
5 # Calculate the value
6 avg_x <- sum(x)/ length(x)
7 avg_y <- sum(y)/ length(y)
8
9 Sxx <- sum((x-avg_x)^2)
10 Syy <- sum((y-avg_y)^2)
11 Sxy <- sum((x-avg_x)*(y-avg_y))
12
13 # Get the b0, b1
14 b1 <- Sxy / Sxx
15 b0 <- avg_y - b1*avg_x
16
17 # Output the result
18 result <- matrix(c(avg_x, avg_y, Sxx, Syy, Sxy, b0, b1), nrow = 1, ncol =
19   c("avg_x", "avg_y", "SSxx", "SSyy", "SSxy", "b0", "b1"))
20 #result[1,1] <- avg_x
21 #result[1,2] <- avg_y
22 #result[1,3] <- Sxx
23 #result[1,4] <- Syy
24 #result[1,5] <- Sxy
25 #result[1,6] <- b0
26 #result[1,7] <- b1
27 result
28
29 yi_h = b1*x + b0
30 residual = y - yi_h
31 residual
32

```

37:1 (Top Level) R Script

```

Console Terminal Jobs
~/
> #result[1,3] <- Sxx
> #result[1,4] <- Syy
> #result[1,5] <- Sxy
> #result[1,6] <- b0
> #result[1,7] <- b1
> result
      avg_x  avg_y SSxx  SSyy SSxy  b0      b1
Value    30 35.42857 2800 929.7143 1580 18.5 0.5642857
>
> yi_h = b1*x + b0
> residual = y - yi_h
> residual
[1] -2.500000  2.857143 -1.785714  3.571429 -2.071429  1.285714 -1.357143
> # Plot the graphic, y = b0+b1*x
> plot(x,y, type = "p", main = "The time spent going to school and time away fr
om home after 7 am", col="blue",
+       xlab = "Time away from home after 7 am", ylab = "The time spent going to
school")
> abline(a=b0, b=b1, col="red", lwd=2)
>
>
>

```

