

# Script\_Semana8.R

Ramon

2025-10-09

```
# Script Semana 8
# 25/09/2025
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##REGRESION LINEAL SIMPLE

#datos
datos<-data.frame(trigo = c(30,28,32,25,25,25,22,24,35,40),
                  harina = c(25,30,27,40,42,40,50,45,30,25))
datos
```

```
##      trigo harina
## 1       30      25
## 2       28      30
## 3       32      27
## 4       25      40
## 5       25      42
## 6       25      40
## 7       22      50
## 8       24      45
## 9       35      30
## 10      40      25
```

```
sumxi_yi <- sum(datos$trigo*datos$harina)
nxy<-length(datos$trigo)*mean(datos$trigo)*mean(datos$harina)
sumxi_yi-nxy
```

```
## [1] -390.4
```

```
xi2 <-sum(datos$trigo^2)
nx2<-length(datos$trigo)*mean(datos$trigo)^2 ##SACAR N

b1 <- (sumxi_yi-nxy)/(xi2-nx2)
b1
```

```
## [1] -1.353675
```

```
b0 <- mean(datos$harina)-b1*mean(datos$trigo)
b0
```

```
## [1] 74.11512
```

```
fit.lm<-lm(datos$harina ~ datos$trigo)
summary(fit.lm)
```

```
##
## Call:
## lm(formula = datos$harina ~ datos$trigo)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -8.5049 -2.9164  0.7268  3.3457  5.6657
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)   74.1151     8.7358   8.484 2.85e-05 ***
## datos$trigo  -1.3537     0.3002  -4.509 0.00198 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 5.098 on 8 degrees of freedom
## Multiple R-squared:  0.7176, Adjusted R-squared:  0.6824
## F-statistic: 20.33 on 1 and 8 DF,  p-value: 0.001978
```

```
anova(fit.lm)
```

```
## Analysis of Variance Table
##
## Response: datos$harina
##              Df Sum Sq Mean Sq F value    Pr(>F)
## datos$trigo   1  528.47   528.47  20.333 0.001978 **
## Residuals     8  207.93    25.99
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
# El cuadrado de este valor de anova nos dice que es lineal si se acerca a 1
# Adjusted R-squared: 0.6824 en este caso fue 0.8260751
#Valor r y Fuerza de correlación
# 0.0 <- 0.1 No hay correlación
# 0.1 <- 0.3 Poca correlación
# 0.3 <- 0.5 Correlación media
# 0.5 <- 0.7 Correlación alta
# 0.7 <- 1 Correlación muy alta
```

```
library(lmtest)
```

```
## Cargando paquete requerido: zoo
```

```
##  
## Adjuntando el paquete: 'zoo'
```

```
## The following objects are masked from 'package:base':  
##  
## as.Date, as.Date.numeric
```

```
bptest(fit.lm) #DETERMINAR SI HAY HOMOCEDASTICIDAD
```

```
##  
## studentized Breusch-Pagan test  
##  
## data: fit.lm  
## BP = 0.33274, df = 1, p-value = 0.5641
```

```
##HOMEGENEIDAD  
fit.lm$model
```

```
## datos$harina datos$trigo  
## 1 25 30  
## 2 30 28  
## 3 27 32  
## 4 40 25  
## 5 42 25  
## 6 40 25  
## 7 50 22  
## 8 45 24  
## 9 30 35  
## 10 25 40
```

```
fit.lm$coefficients
```

```
## (Intercept) datos$trigo  
## 74.115118 -1.353675
```

```
fit.lm$residuals
```

```
## 1 2 3 4 5 6 7  
## -8.5048544 -6.2122053 -3.7975035 -0.2732316 1.7267684 -0.2732316 5.6657420  
## 8 9 10  
## 3.3730929 3.2635229 5.0319001
```

```
mean(fit.lm$residuals)
```

```
## [1] -4.883247e-16
```

```
#SI ES CERO
```

```
datos$yprima <- 74.11512 - 1.353675 *datos$trigo  
datos$recta <- fit.lm$fitted.values
```

```
datos$yprima <- b0 + b1 *datos$trigo
datos$residuales <- datos$harina-datos$recta
SSE <- sum(datos$residuales^2)
SSE/8
```

```
## [1] 25.99064
```

```
sqrt(SSE/8)
```

```
## [1] 5.098101
```