Spring 2025 ..... Score _____ / 20

Homework #4

[Chaemin Lee, lab2 Anthony]

---

highlight and click "Run" the line below before knitting

install.packages("rmarkdown")

```
# set seed replace 12345678 with your student ID
seed = 12345678
```

```
# loads in data for the full population
pop<-read.csv("HW4.csv")
names(pop) <- c("X", "Y")
```

```
# sets the seed for the random number generator
set.seed(seed+25)
```

```
# assigns a "random" sample of 10 from the population to 'data'
data<-pop[sample(nrow(pop), 10, replace=FALSE),]

# use this data
data
```

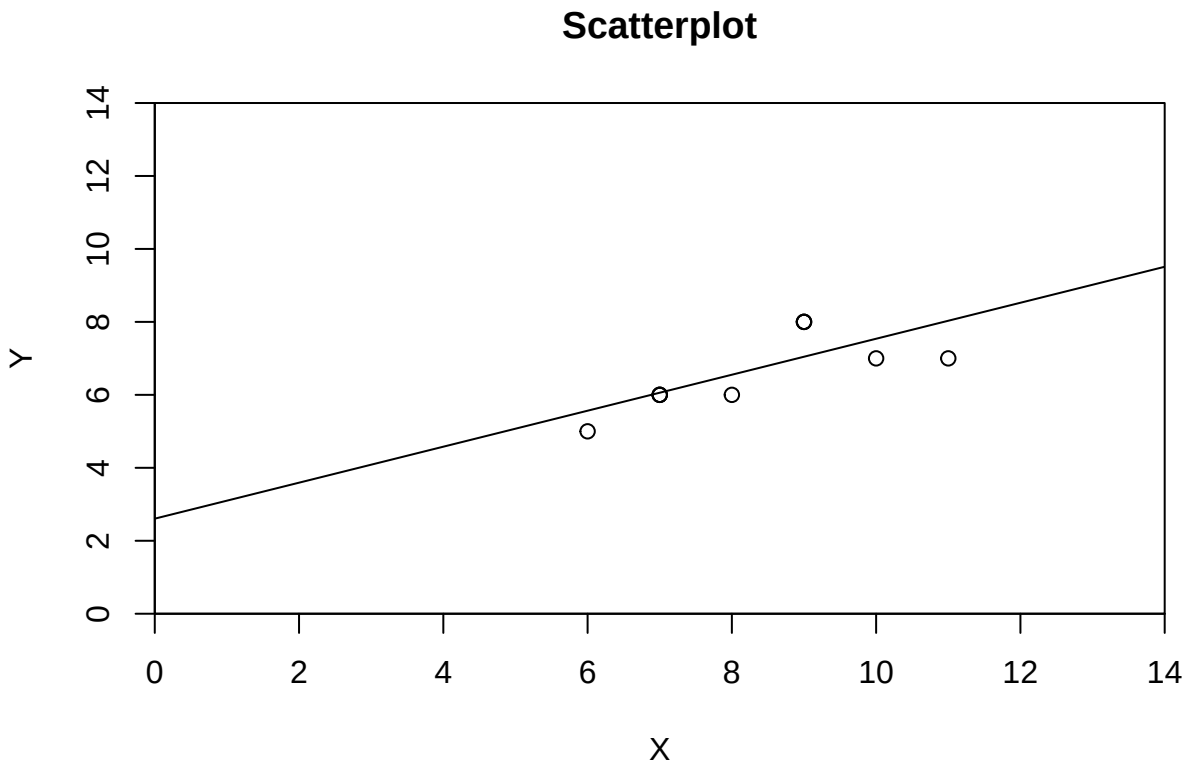
```
##      X Y
## 954  7 6
## 903  7 6
## 965  7 6
## 161  9 8
## 717  6 5
## 656  9 8
## 255  8 6
## 127 11 7
## 754 10 7
## 441  9 8
```

```
# regression
model <- lm(Y ~ X, data=data)
summary(model)
```

```
##
## Call:
## lm(formula = Y ~ X, data = data)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1.03167 -0.54864 -0.05882  0.70136  0.95475
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
```

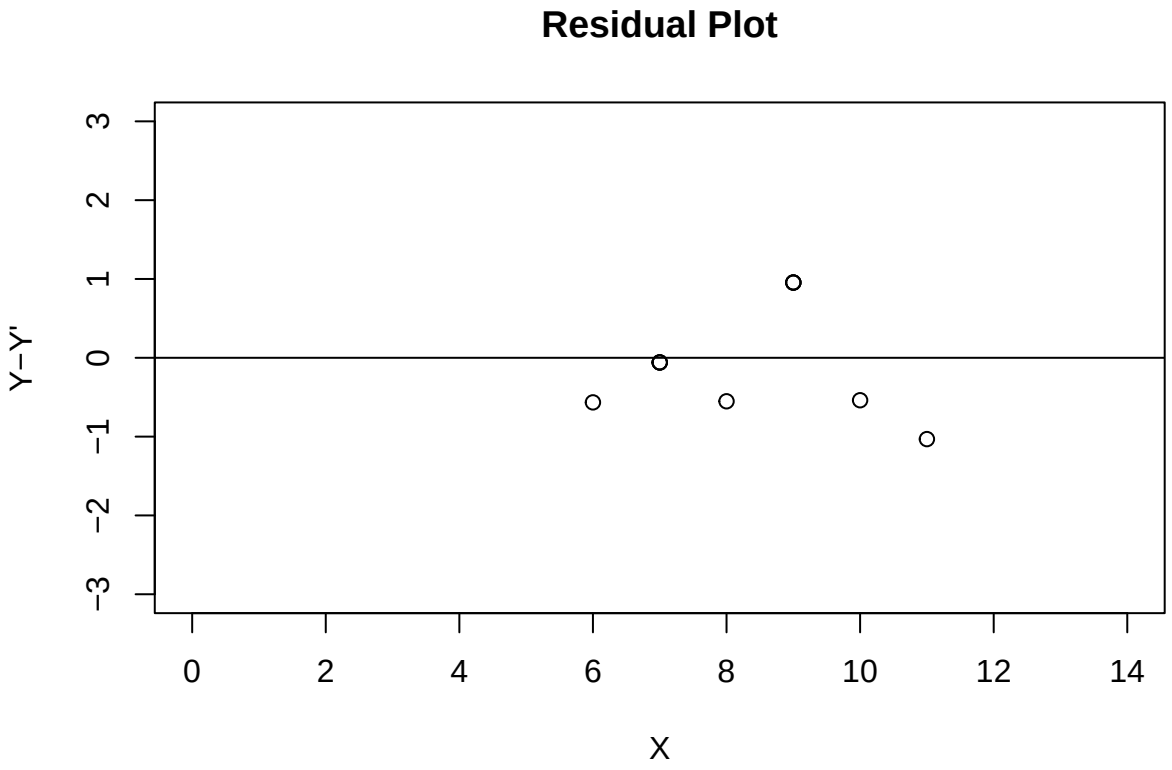
```
## (Intercept)   2.6063     1.3783   1.891   0.0953 .
## X             0.4932     0.1635   3.017   0.0166 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.7684 on 8 degrees of freedom
## Multiple R-squared:  0.5323, Adjusted R-squared:  0.4738
## F-statistic: 9.104 on 1 and 8 DF,  p-value: 0.01663
```

```r
# creates plot
plot(data$X, data$Y, main=c(paste("Scatterplot")), xlim=c(0,14), ylim=c(0,14), xlab="X", ylab="Y", xaxs
abline(lm(Y ~ X, data=data))
```




```r
# calculates predicted values and residuals
data$resid <-round(residuals(model),4)
```

```r
# creates residual plot
plot(data$X, data$resid, main=c(paste("Residual Plot")), xlim=c(0,14), ylim=c(-3,3), xlab="X", ylab="Y-
abline(0,0)
```


Residual Plot
Y−Y'
3
2
1
0
−1
−2
−3
0
2
4
6
8
10
12
14
X