Week 11 Assignment

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Using the lm function, perform regression analysis and measure independent variables on two datasets.

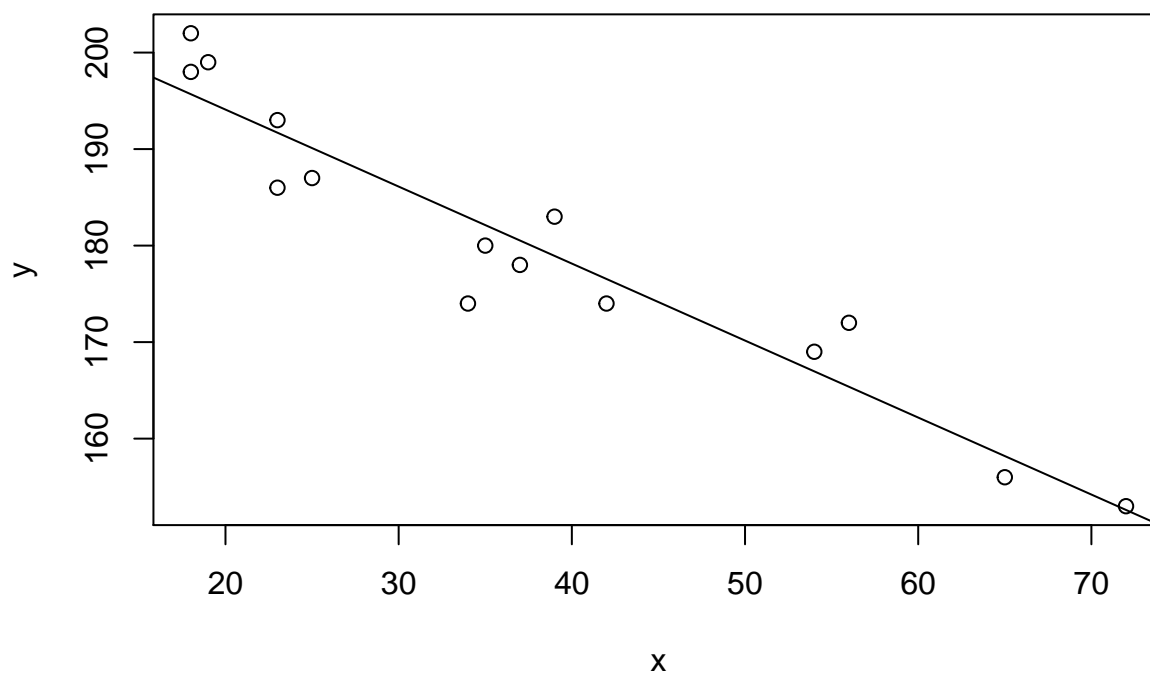**First Data Set** The first data set is heart rate. First create the data set.

```
x = c(18,23,25,35,65,54,34,56,72,19,23,42,18,39,37)
y = c(202,186,187,180,156,169,174,172,153,199,193,174,198,183,178)
```

Plot x and y with regression line and basic values of regression analysis

```
plot(x,y)
lm_age = lm(y ~ x)
lm_age
```

```
##
## Call:
## lm(formula = y ~ x)
##
## Coefficients:
## (Intercept)            x
##     210.0485      -0.7977
```

```
abline(lm_age)
```

```
summary(lm_age)
```

```
## 
## Call:
## lm(formula = y ~ x)
## 
## Residuals:
##     Min      1Q  Median      3Q     Max
## -8.9258 -2.5383  0.3879  3.1867  6.6242
## 
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept) 210.04846    2.86694   73.27  < 2e-16 ***
## x            -0.79773    0.06996  -11.40 3.85e-08 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 
## Residual standard error: 4.578 on 13 degrees of freedom
## Multiple R-squared:  0.9091, Adjusted R-squared:  0.9021
## F-statistic:   130 on 1 and 13 DF,  p-value: 3.848e-08
```

Find that the resulting equation is more like this:

$MaxHR = -0.7977 + 210.0485$

As you can see in summary(lm_age) you have a hypothesis test calculated by R.

```
summary(lm_age)
```

```
residuals(lm_age)
```

```
##         1          2          3          4          5          6
##  6.3106197 -5.7007474 -3.1052943 -2.1280287 -2.1962317  2.0287761
```

```
##           7           8           9          10          11          12
## -8.9257552  6.6242292  0.3878543  4.1083463  1.2992526 -2.5439427
##          13          14          15
##  2.3106197  4.0628776 -2.5325755
```

It does not look like it is significant.

It seems like it is not significant, but you can test to see if the slope is around -1