STA Quiz 5.1 Leeson Chen

R Code:

```
mtcars
plot(mtcars$mpg,mtcars$disp,pch=16,xlab="explanatory X",ylab="response variable
Y",main="Scatterplot")
reg=lm(disp~mpg,data=mtcars)
summary(reg)
anova(reg)
abline(reg)
```

Output:

```
> plot(mtcars$mpg,mtcars$disp,pch=16,xlab="explanatory X",ylab="response variable
Y",main="Scatterplot")
>
> reg=lm(disp~mpg,data=mtcars)
> summary(reg)

Call:
lm(formula = disp ~ mpg, data = mtcars)

Residuals:
   Min      1Q  Median      3Q     Max
-103.05  -45.74   -8.17   46.65  153.75

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)  580.884     41.740  13.917 1.26e-14 ***
mpg          -17.429      1.993  -8.747 9.38e-10 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 66.86 on 30 degrees of freedom
Multiple R-squared:  0.7183,  Adjusted R-squared:  0.709
F-statistic: 76.51 on 1 and 30 DF,  p-value: 9.38e-10
> anova(reg)
Analysis of Variance Table

Response: disp
          Df Sum Sq Mean Sq F value    Pr(>F)
mpg        1 342064  342064  76.513 9.38e-10 ***
Residuals 30 134121    4471
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
> abline(reg)
```

***THE OUTPUT IS HARD TO READ HERE SO I INCLUDED A PICTURE:

```
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> summary(reg)

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> abline(reg)
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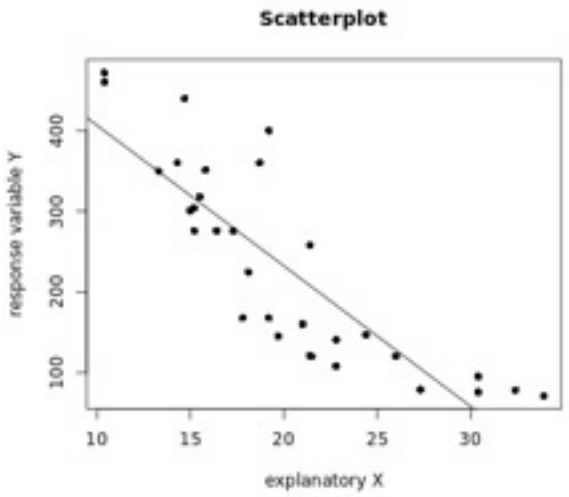
Graph:



R^2 is 0.7183, close to 1 meaning the data has a strong correlation, and the line fits well.