Let,

X=The SO2 deposition rate (mg/m^2/d)

Y=The steel weight loss (g/m^2)

1. Scatterplot **Ans: B)**



From the above scatterplot we seen that,

**Ans:B) Yes, the scatterplot shows a reasonable linear realtionship.**

b)

**Y^=139.758+8.866\*X**

1. The correlation coefficient,r=0.995
2. **Y^=159.66+8.21\*X**

**Ans: A) Yes, removing the point changed the slope of line**

**R code and output: with all observations**

> x=c(15,18,40,43,45,120)

> y=c(250,350,460,500,560,1210)

> plot(x,y)

> mod=lm(y~x);summary(mod);cor(x,y)

Call:

lm(formula = y ~ x)

Residuals:

1 2 3 4 5 6

-22.754 50.647 -34.413 -21.012 21.255 6.277

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) 139.7581 24.6828 5.662 0.0048 \*\*

x 8.8664 0.4231 20.957 3.06e-05 \*\*\*

Residual standard error: 36.05 on 4 degrees of freedom

Multiple R-squared: 0.991, Adjusted R-squared: 0.9887

F-statistic: 439.2 on 1 and 4 DF, p-value: 3.064e-05

[1] 0.9954772

**R code and output: without all observations**

x=c(15,18,40,43,45)

> y=c(250,350,460,500,560)

> plot(x,y)

> mod=lm(y~x);summary(mod);cor(x,y)

Call:

lm(formula = y ~ x)

Residuals:

1 2 3 4 5

-32.80 42.57 -28.03 -12.66 30.92

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) 159.659 47.887 3.334 0.04458 \*

x 8.209 1.380 5.950 0.00949 \*\*

Residual standard error: 39.96 on 3 degrees of freedom

Multiple R-squared: 0.9219, Adjusted R-squared: 0.8958

F-statistic: 35.4 on 1 and 3 DF, p-value: 0.009494

[1] 0.9601448

Let, µ be the mean amount of time computer users spend on the internet each month.

Here we have to find the sample size ,n i.e. the number of computer users surveyed in order to be 95% confident that sample mean is within 15 minutes of the population mean

Given that,

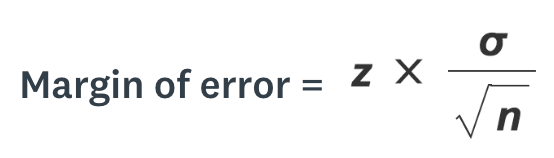
Population standard deviation, sigma=221 minutes

Significance level,α=0.05

Maegin of error,E=15 minutes

Critical value, Zα/2=Z0.025=1.96

We have ,



**Using R:**

> E=15;sigma=221;z\_value=1.96

> n=((z\_value\*sigma)/E)^2

> n

[1] 833.9004

> round(n,0)

[1] 834

**Ans: The minimum sample size required is 834 computer users.**

**There are no obstacles**

**Ans : Option D) There are no obstacles to getting a good estimate of the population mean.**