Regression ANOVA : Worked Example

(Edited Down Version of Royal Stat Society Exam Question)

The Devon Motor Racing Grand Prix takes place every five years.

Year x	1965	1970	1975	1980	1985	1990	1995	2000	2005
Speed y	109	114	116	117	114	127	131	138	141

(There is a segment I removed from here)

It is later noted that driving conditions in 1985 were affected by a freak thunderstorm which caused partial flooding of the track. The Data is now tabulated as follows:

Year x	1965	1970	1975	1980	1990	1995	2000	2005
Speed y	109	114	116	117	127	131	138	141

The 1985 values were therefore omitted and the regression was recalculated.

N.B – The Standard Deviation of “y” (speed) is 11.83744

(ii) It is later noted that driving conditions in 1985 were affected by a freak thunderstorm which caused partial flooding of the track. The 1985 values were therefore omitted and the regression was recalculated. Results are shown in the computer output below. Compare this analysis with your own results and say with reasons which you regard as the more satisfactory.

(3)

```
The regression equation is    y = - 1464 + 0.800 x

Predictor       Coef    SE Coef         T       P
Constant    -1463.87      95.60    -15.31   0.000
x            0.80000    0.04816     16.61   0.000

S = 1.86525   R-Sq = 97.9%   R-Sq(adj) = 97.5%

Analysis of Variance
Source           DF       SS        MS         F       P
Regression        1   960.00    960.00    275.93   0.000
Residual Error    6    20.87      3.48
Total             7   980.87
```

- What is the correlation coefficient between “X” (Years) and “Y”(Speed)?
- Verify the Sums of Squares values in the regression ANOVA table.