Practice Problems: The Lack of Fit Test

**The Lack of fit table**. Fill in the missing numbers (??) in the following analysis of variance table resulting from a simple linear regression analysis:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Source | DF | SS | MS | F | P |
| Regression | ?? | 12.597 | ?? | ?? | 0.000 |
| Residual Error | ?? | ?? | ?? |  |  |
| Lack of Fit | 3 | ?? | ?? | ?? | ?? |
| Pure Error | ?? | 0.157 | ?? |  |  |
| Total | 14 | 15.522 |  |  |  |

**Answer**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Source | DF | SS | MS | F | P |
| Regression | 1 | SSR | MSR | F=MSR/MSE |  |
| Residual Error | n-2 | SSE=SSLF+SSPE | MSE |  |  |
| Lack of Fit | c-2 | SSLF | MSLF | F\*=MSLF/MSPE |  |
| Pure Error | n-c | SSPE | MSPE |  |  |
| Total | n-1 | SSTO=SSR+SSE |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Source | DF | SS | MS | F | P |
| Regression | 1 | 12.597 | 12.597 | 55.987 | 0.000 |
| Residual Error | 13 | 2.925 | 0.225 |  |  |
| Lack of Fit | 3 | 2.768 | 0.923 | 58.79 | \* |
| Pure Error | 10 | 0.157 | 0.0157 |  |  |
| Total | 14 | 15.522 |  |  |  |

\*-value =