**2.5 Linear Regression on Calculators**

The winning times for the men’s Olympic 1500-meter freestyle swimming event are given in the table. Notice that there is not a winning time recorded for the year 1916, 1940 and 1944 (I wonder why???).

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Year** | 1908 | 1912 | 1920 | 1924 | 1928 | 1932 | 1936 | 1948 | 1952 | 1956 | 1960 | 1964 | 1968 | 1972 | 1976 | 1980 | 1984 | 1988 | 1992 | 1996 |
| **Time (min)** | 22.81 | 22.00 | 22.39 | 20.11 | 19.86 | 19.21 | 19.23 | 19.31 | 18.51 | 17.98 | 17.33 | 17.03 | 16.65 | 15.88 | 15.04 | 14.97 | 15.09 | 15.00 | 14.72 | 14.94 |

This is the scatter plot of the data:

|  |  |
| --- | --- |
|  | Describe the correlation.Find the equation of a line of best fitWhat is the slope of the line of best fit?What does this slope mean for this data?Use the line of best fit to predict the winning time for this year.Use the line of best fit to find the year when the winning time will be 12 minutes. |