FST Name:

2.8 Least Squares Regression Lines Date: Block:

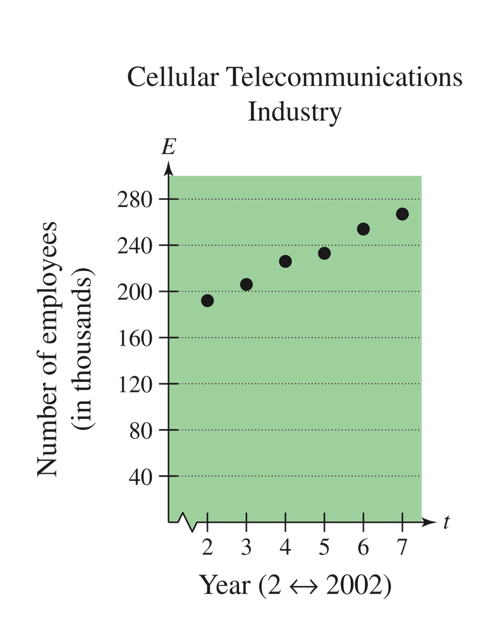
The data in the table below shows the number E (in thousands) of employees in the cellular communications industry in the US from 2002 to 2007.

|  |  |
| --- | --- |
| Year | Employees (thousands) |
| 2002 | 192 |
| 2003 | 206 |
| 2004 | 226 |
| 2005 | 233 |
| 2006 | 254 |
| 2007 | 267 |

**Line of Best Fit**

\*Fitting a linear models to best represent the relationship described by a scatter plot.

\* You can do this by finding the equation that passes through two points.

**Ex. 1** Find a linear model that relates the year to the number of employees in the cellular industry in the US.

\*\*\*Note\*\*\* Once you have found a model, you can determine how well it fits by comparing the actual values with the values given by the model.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| t | 2 | 3 | 4 | 5 | 6 | 7 |
| Actual  E | 192 | 206 | 226 | 233 | 254 | 267 |
| Model E |  |  |  |  |  |  |

**Residual**

\*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Least Squared Regression (Linear Regression)**

**https://www.youtube.com/watch?v=jEEJNz0RK4Q**

\*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Correlation Coefficient**

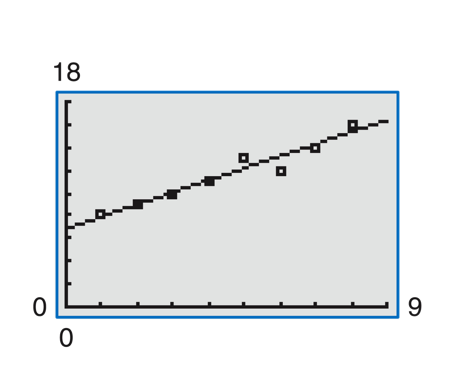
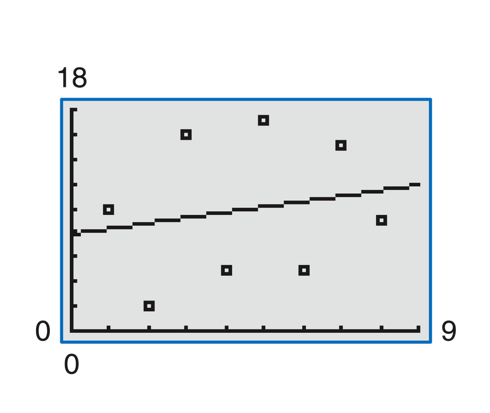
\* When you use a regression feature, you may get an r-value.

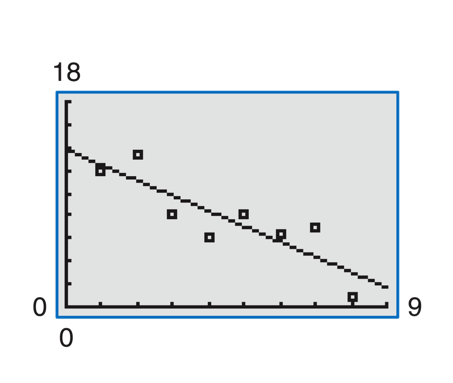
\* This is called the correlation coefficient.

\* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Ex. 2** What do you think r is?

**Ex. 3** Open the CODAP file Manatee Deaths and analyze the data using motorboat registrations as the independent variable and deaths as the dependent variable.

Model:

Analysis:

**Steps to calculating r2 in CODAP**