# 9. Least-squares regression lines on the calculator

Let's use the Ford F-150 data to show how to find the equation of the least-squares regression line on the TI-Nspire. Here are the data:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Miles driven | 70,583 | 129,484 | 29,932 | 29,953 | 24,495 | 75,678 | 8359 | 4447 |
| Price (in dollars) | 21,994 | 9500 | 29,875 | 41,995 | 41,995 | 28,986 | 31,891 | 37,991 |
| Miles driven | 34,077 | 58,023 | 44,447 | 68,474 | 144,162 | 140,776 | 29,397 | 131,385 |
| Price (in dollars) | 34,995 | 29,988 | 22,896 | 33,961 | 16,883 | 20,897 | 27,495 | 13,997 |

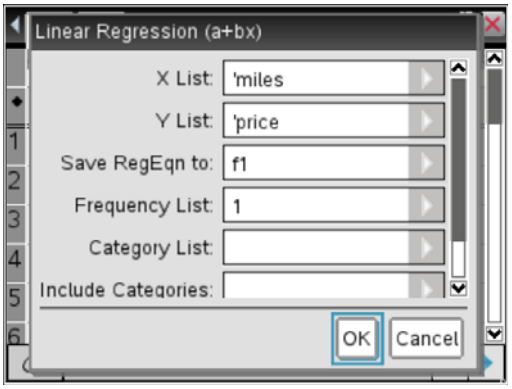
1. Insert a *New Document* by pressing ctrl N.

2. Insert a *Lists & Spreadsheet* page by arrowing down to *Add Lists & Spreadsheet.*
   - Name column A **miles** and column B **price**.
   - Type the corresponding values into each column.

3. Graph the data in a scatterplot putting **miles** on the horizontal axis and **price** on the vertical axis. Refer to the previous TI-Nspire Technology Corner.

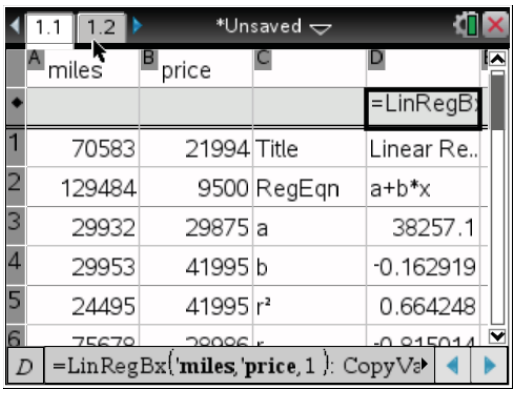
4. To add a least-squares regression line, first ctrl ◀ back to the *Lists & Spreadsheet* page.

5. Press menu, and arrow to *Statistics*→ *Stat Calculations*, *Linear Regression* ($a + bx$), enter. You then see a dialogue box. In the drop-down boxes, arrow down to **miles** for the *X List:*, then press tab and arrow down to **price** for the *Y List:*. tab to OK and press enter.

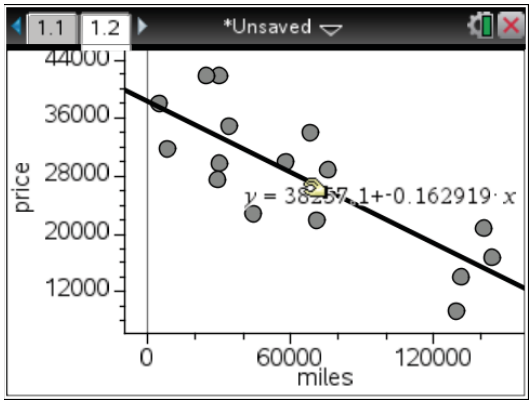



The linear regression information, $a$, $b$, $r^2$, $r$, and *resid* will be displayed in another column within the *Lists & Spreadsheet* page.




6. ctrl ▶ to the *Data & Statistics* page. Press menu; arrow to *Analyze*→*Regression*→ *Show Linear (a + bx)*, and press enter. The least squares regression line along with the equation will appear. If you arrow over the equation, the ☜ will appear. Click and hold ☜. When the hand closes, ✊, you can move the equation using the arrow keys.




7. Save the document for later use. Press ctrl S. Name your document: **Truck prices**.