Exploring Linear Regression in NETBOOKS Part II

Is it possible to predict battery life of a new netbook? Is battery life related to the weight of a netbook?

1. Open the document, **Netbook** from the Statistics folder that you saved in the *Scatterplots* activity.

2. Go to your *Lists & Spreadsheet* page, and press (menu), *Statistics, Stat Calculations, Linear Regression (a + bx)*. A dialogue box will appear. Select **weight** for the *x* and **battery** for the *y*. Press (tab) until [OK] is highlighted, then press (enter).

Record this equation here and answer the questions below.

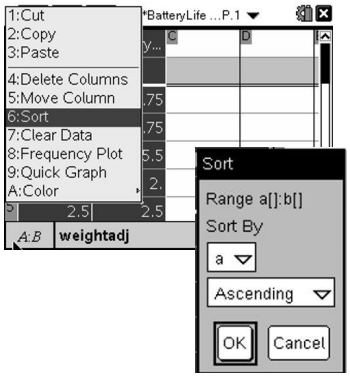
Rewrite the equation in terms of what the variables represent. Write a statement about what the slope of the equation means.

In the previous activity, *Scatterplots*, there were two points that could be considered *influential*, (2.4, 5.5) and (3.2, 9.7). Write a description of how these points might *influence* the least squares regression line.

3. Insert a *Lists & Spreadsheet* → (ctrl) [I], *Add Lists & Spreadsheet*.
4. In the column A heading, type **weightadj** and press (enter). Press (enter) again and type **weight** in the formula bar.

5. In the column B heading, type **batteryadj** and press (enter). Press (enter) again and type **battery**.

6. To find the *influential points* within the data, we need to sort the data pairs. Highlight both columns → In column A, arrow up until the column is highlighted. Then press and hold (⇧shift) and arrow to the right to include column B. Press (ctrl) (menu) and select sort. You will see a caution box. (tab) to [OK] and press (enter).



7. Arrow down to each *influential* point and highlight both cells → press and hold (⇧shift) and arrow to the right. Press (ctrl) (menu) and select *Delete Cells*.

8. Re-calculate the linear regression using the adjusted values. Press (menu), *Statistics, Stat Calculations, Linear Regression (a + bx)*. A dialogue box will appear. Select **weightadj** for the *x* and **batteryadj** for the *y*. Press (tab) until [OK] is highlighted, then press (enter).

Write the linear regression equation for the adjusted values. In few sentences, compare this equation with the original least squares regression line.

In the column where you calculated the Linear Regression, find the value of *r* for the adjusted data. Compare this value with the *r* value from the original data.

Write a conclusion describing what you have learned about influential points.