TI-84 Linear Regression T-Intervals

The TI-84 can calculate a confidence interval on the slope parameter b_1 for the linear regression equation.

Begin by entering the data in the Lists in the calculator. You will find these by pressing [STAT] and then selecting Edit… Then enter the data into the list. Use L1 for the x-variable and L2 for the y-variable. Be sure that the lists are ordered so that the corresponding entries in each list go with each other. Neither list needs to be ordered in any other way.

```
EDIT CALC TESTS    L1      L2      L3      2
1:Edit…             28      68      .921
2:SortA(            30      71      .893
3:SortD(            31      79      .886
4:ClrList           34      83      .924
5:SetUpEditor       35      91      .91
                    36      85      .877
                    ------          .941
                    L2(13) =
```

When the data is entered into the calculator, EXIT and then select [STAT] and TESTS. **LinRegTInt** is #G on this list. Scroll up to get to the bottom of the list.

```
EDIT CALC TESTS
B↑2-PropZInt…
C:X²-Test…
D:X²GOF-Test…
E:2-SampFTest…
F:LinRegTTest…
G:LinRegTInt…
H:ANOVA(
```

```
LinRegTInt
 Xlist:L1
 Ylist:L2
 Freq:1
 C-Level:.95
 RegEQ:
 Calculate
```

The function asks you to specify which list has the x-variables, and which are the y-variables. You use any of the lists but these are the defaults. Set the frequency to 1. (This is normal. Setting it to other values changes the T test, since this is where the same size is calculated.) The C-Level is the confidence level. We are going to use the typical 95% confidence interval. (Recall that intervals are always two-tailed.) If you want the Regression Equation stored somewhere, add the equation to the RegEQ line. From that line press [VARS] scroll over to Y-VARS, select #1: Function.. and the Y equation where you want the regression equation stored.

Then press calculate. The output is too long to fit on one screen, so you'll need to scroll down to see all of it.

```
LinRegTInt
 y=a+bx
 (1.1503,1.8205)
 b=1.48540896
 df=10
 s=3.709442966
↓a=31.84134813
```
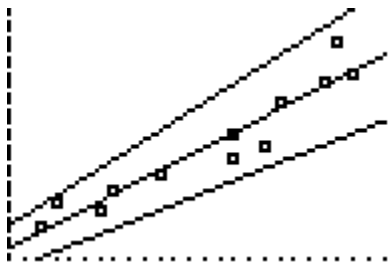
```
LinRegTInt
 y=a+bx
↑df=10
 s=3.709442966
 a=31.84134813
 r²=.9070063047
 r=.9523687861
```

```
FUNCTION
1:Y1
2:Y2
3:Y3
4:Y4
5:Y5
6:Y6
7↓Y7
```

The confidence interval provided is a confidence interval for the slope of the regression line. You can use the confidence interval to conduct hypothesis tests for particular values of the slope. If the comparison value is within the interval, keep the null hypothesis, and if the interval does not contain the comparison slope, reject the null hypothesis. The typical comparison value is zero, but you can use this for non-zero values.

Also note that among the things calculated for this interval are the correlation values for the regression slope.

You can use the confidence interval slopes on the graph of the scatter plot, though you will have to enter these equations by hand. The scatter plot below shows the confidence interval boundaries graphed on the data and the regression line in the middle.

LinRegTInt