TI Technology Guide for More 10-digit dialing

TI-83 Plus and TI-84 Plus Families

Creating Lists of Data, Displaying a Graph, Determining the Values of r^2 and r, Modeling Data with a Linear Function, Finding the Sum of a List, and 1-Variable Statistics.

Creating Lists of Data
To enter the data from the Snapshot in the activity, press [STAT] and select 1:**Edit** to access the List Editor. Be sure to clear any existing data in the lists by highlighting the list name and pressing [CLEAR][ENTER]. If you see a list other than L1 through L6, press [STAT], select **5:SetUpEditor**, then press [ENTER] and follow the above instructions.

Move the cursor to the first data position in L1 and enter the data from the Snapshot for years since 1995. This means that 1997 would be represented by 2. Move the cursor to the first position in L2 and enter the corresponding number of area codes.

Displaying a Graph

Access the STAT PLOTS menu by pressing [2nd][Y=]. Select 1:Plot1 to get the screen shown. Notice that Plot1 and On are highlighted. To turn on or off any plot, place the cursor over the name, press [ENTER], then select either On or Off, and press [ENTER] again. This process acts like a toggle switch to turn the plots on and off the graphing display.

Press [Y=] and clear any equations listed.

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Press ZOOM 9, this will automatically adjust the viewing window to display all the data points in the scatter plot.
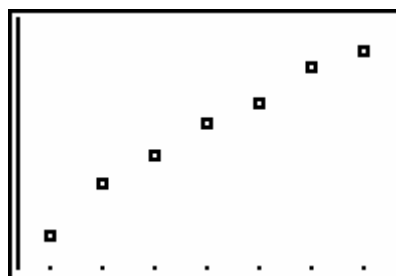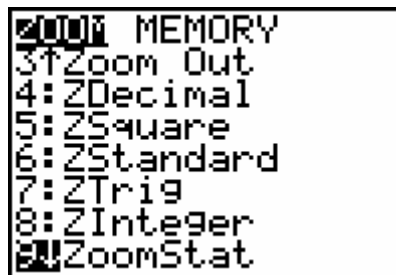
Determining the Values of r^2 and r
The diagnostic values of r and r^2 are found in the CATELOG, to display the CATELOG press 2nd [CATALOG]. Press ▼ or ▲ keys to scroll the CATELOG until the selection cursor points to the item you want. Or you can jump to the item beginning with a particular letter by pressing that letter, alpha lock is on. In this case press the letter D for diagnostics and you will jump to the items beginning with D. Now arrow down to find DiagnositcOn.
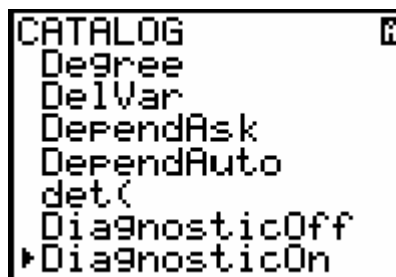
Press ENTER ENTER to paste the item to the home screen and set the mode for diagnostic on.

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Modeling Data with a Linear Function
To find the linear function that best models the data, press $\boxed{\text{STAT}}\boxed{\blacktriangleright}\boxed{\blacktriangledown}$ to find **8:LinReg(a+bx)**. Press $\boxed{\text{ENTER}}$. On the home screen after the LinReg prompt enter, $\boxed{\text{2nd}}$ [L1] $\boxed{,}\boxed{\text{2nd}}$[L2]$\boxed{,}$ press $\boxed{\text{VARS}}\boxed{\blacktriangleright}\boxed{\text{ENTER}}\boxed{\text{ENTER}}$.

```
LinReg(a+bx) L1,
L2,Y1
```

Press $\boxed{\text{ENTER}}$ again to have the handheld calculate the linear function that best models the data set.

```
LinReg
 y=a+bx
 a=121
 b=19.85714286
 r²=.9814339776
 r=.990673497
```

The function has been entered for Y1 in the Y= editor. Press $\boxed{\text{Y=}}$. Round the slope to two decimal places and enter the linear function in the Y= editor. This will be used for the remaining calculations.

```
Plot1 Plot2 Plot3
\Y1■121+19.86X
\Y2=■
\Y3=
\Y4=
\Y5=
\Y6=
\Y7=
```

Press $\boxed{\text{GRAPH}}$ to see the scatter plot and the linear function in the same viewing window.

```
P1:L1,L2



X=2        .Y=151  .  .
```
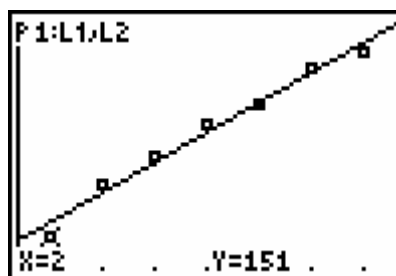
Press $\boxed{\text{TRACE}}$ to see the coordinates. Press $\boxed{\blacktriangledown}$ or $\boxed{\blacktriangle}$ to toggle between the scatter plot data and the linear function when you are tracing. Press the $\boxed{\blacktriangleright}$ or $\boxed{\blacktriangleleft}$ keys to move on the scatter plot and linear model.

```
Y1=121+19.86X



X=5       .   .Y=220.3   .
```
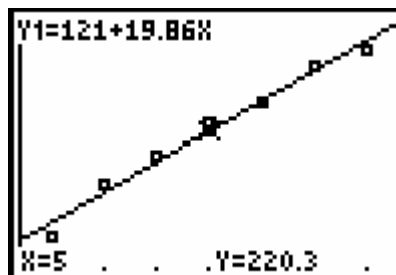
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Calculating the standard error using the list editor

Press [STAT][ENTER] and move the cursor to the top of L3 so that L3 is highlighted. Press [VARS][▶][ENTER][ENTER].

L1	L2	**L3**	3
2	151	------	
3	186		
4	204		
5	226		
6	239		
7	262		
8	274		

L3 =Y₁(L₁)

To evaluate the linear model for each value in L1, press [(][2nd][L1][)] [ENTER].

L1	L2	L3	3
2	151	160.72	
3	186	180.58	
4	204	200.44	
5	226	220.3	
6	239	240.16	
7	262	260.02	
8	274	279.88	

L3(1)=160.72

Move the cursor to the top of L4 and enter L2 – L3.

L2	L3	**L4**	4
151	160.72	------	
186	180.58		
204	200.44		
226	220.3		
239	240.16		
262	260.02		
274	279.88		

L4 =L₂−L₃■

Press [ENTER].

L2	L3	L4	4
151	160.72	-9.72	
186	180.58	5.42	
204	200.44	3.56	
226	220.3	5.7	
239	240.16	-1.16	
262	260.02	1.98	
274	279.88	-5.88	

L4(1)= -9.72

Move the cursor to the top of L5 and enter $L4^2$.

L3	L4	**L5**	5
160.72	-9.72	------	
180.58	5.42		
200.44	3.56		
220.3	5.7		
240.16	-1.16		
260.02	1.98		
279.88	-5.88		

L5 =L₄²■

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Press [ENTER].

L3	L4	L5	5
160.72	-9.72	94.4784	
180.58	5.42	29.376	
200.44	3.56	12.674	
220.3	5.7	32.49	
240.16	-1.16	1.3456	
260.02	1.98	3.9204	
279.88	-5.88	34.574	

L5(1)=94.4784

Finding the Sum of a List
Press [2nd][QUIT] to return to the home screen.

Press [2nd][√]
Press [√][2nd][LIST][◄]5 [5][L5][)]. Finish entering the formula to calculate the standard error. Press [ENTER].

√(sum(L5)/(7-2)
         6.463107612

1-Variable Statistics

The one-variable statistics menu will help calculate the maximum error of estimate for the prediction interval.

Press [2nd] [QUIT]

Press [STAT][►][ENTER].

Press [2nd][L1] [ENTER]

1-Var Stats L1■

This screen will give you the values for calculating the maximum error which will be used to determine the prediction interval. Enter the values on the home screen to determine your answer.

1-Var Stats
x̄=5
Σx=35
Σx²=203
Sx=2.160246899
σx=2
↓n=7
■