TI Technology Guide for The More the Merrier?

TI-83 Plus and TI-84 Plus Families

Creating Lists of Data, Displaying the Graph, Using the Regression Capabilities of the Handheld, Predicting Using the Regression Model, and Finding the Change Between Entries in the List Editor

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

Move the cursor to the first data position in L1. Enter data from the Snapshot that represent the year when the population was estimated. Move the cursor to the first data position in L2 and enter the corresponding population for that year.

Access the STAT PLOTS menu by pressing ψo. 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 ⊆, then select either On or Off, and press ⊆again. This process acts like a toggle switch to turn the plots on and off the graphing display.


Press oand clear any equations listed.

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To insure all the data points are visible, press
Window and enter values for the x-axis and y-axis
that contain the range of values from the graphic.

```
WINDOW
 Xmin=1935
 Xmax=2005
 Xscl=5
 Ymin=130
 Ymax=300
 Yscl=1
 Xres=1
```

Press σ
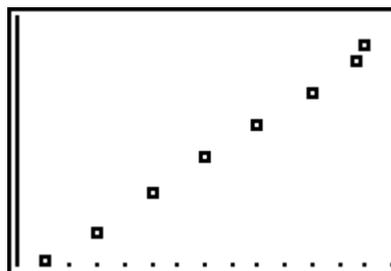
Another feature of the graphing calculator is to set the
Window automatically. Press θ→⊆, this will
automatically adjust the viewing window to display
all the data points in the scatter plot.

```
ZOOM MEMORY
3↑Zoom Out
4:ZDecimal
5:ZSquare
6:ZStandard
7:ZTrig
8:ZInteger
9↓ZoomStat
```

To use the regression capabilities, press ~ to access
the CALC menu. Select 4:LinReg(ax+b) and enter
ψL1′ψL2′ press ~⊆⊆.

```
LinReg(ax+b) L₁,
L₂,Y₁█
```

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Press ⊆to have the handheld calculate the linear
function that best models the data set.
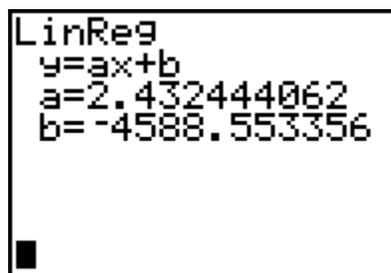
```
LinReg
  y=ax+b
  a=2.432444062
  b=-4588.553356

■
```

Press σ.  The regression line and the scatter plot are
displayed simultaneously.
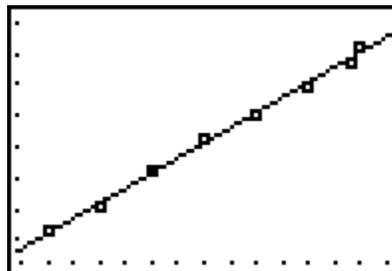
Press oto view the linear function.  Notice that Plot 1 is
highlighted, which indicates that the data points for L1
and L2 are showing on the graph.  The = beside Y1 is
also highlighted, which indicates that the linear
function determined by the regression capabilities is
also showing on the graph.  Pressing ⊆when the cursor
is in either of these highlighted areas acts as a toggle to
turn on or off the display of that component on the
graph.
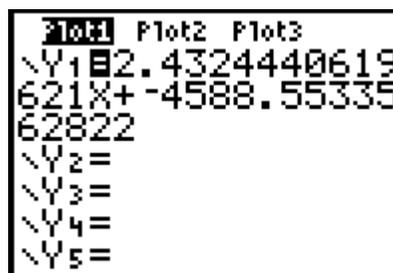
```
Plot1 Plot2 Plot3
\Y1■2.4324440619
621X+ -4588.55335
62822
\Y2=
\Y3=
\Y4=
\Y5=
```

Press σρto see the coordinates.  Press  }or   to toggle
between the scatter plot data and the linear function.

```
Y1=2.4324440619621X+ -45
X=1970 . . . .Y=203.36145 .
```
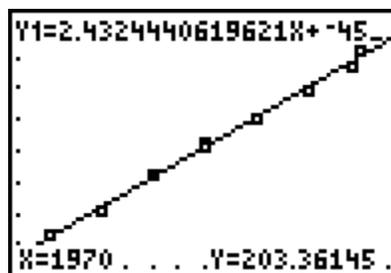
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To find the expected population in 2025, move the blinking cursor using the }or ⟩ so that it is on the linear function. Entering the x value will automatically display this value at the bottom of the screen. Remember to change the values in the Window to include 2025.

```
Y1=2.4324440619621X+⁻45_
                            ▫
                          ▫
                       ▫
                    ▫
                  ▫
              ▫
          ▫
      ▪
X=2025▪
```
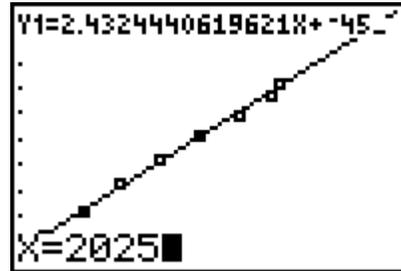
Press ⊆and the corresponding population will be displayed.

```
Y1=2.4324440619621X+⁻45α
                            ▫
                          ▫
                       ▫
                    ▫
                  ▫
              ▫
          ▫
      ▪
X=2025 . . . . Y=337.14587 .
```
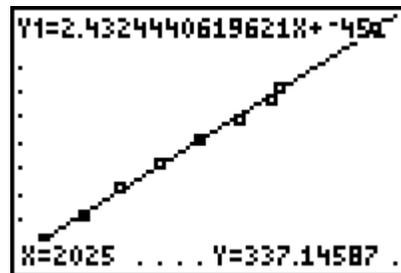
A second way to view the corresponding data is to use the table view. To access this feature, press ψ π. The TABLE SETUP screen will display, a sample is shown. – indicates the lower x (independent) value of the window setting and ∆Tbl indicates that the x values will increase or decrease by that value.

```
TABLE SETUP
 TblStart=1940
 ∆Tbl=5
Indpnt: Auto  Ask
Depend: Auto  Ask
```

Press ψ0to show the table with values for the years and corresponding expected number of students. Use the down arrow key to scroll the table to find your answers.

X	Y1
1995	264.17
2000	276.33
2005	288.5
2010	300.66
2015	312.82
2020	324.98
2025	337.15

X=2025

A third way to determine the expected population for a given year is to evaluate the Y= function. Press ψ5 .
Press ~ ⊆⊆.

```
Y1
```

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Following the Y1 enter ≤ℑ⊇ℑ•∕and press ⊆. This represents the predicted population for the year 2025 in millions.

```
Y₁(2025)
          337.1458692
```

To find the change between entries in the LIST editor. Press ⊆

Move the cursor to the top of L3.
Press ψ9~ to OPS and select 7:ΔList(

Press ψL2∕⊆

```
L1      L2       3      3
1940    132    ------
1950    152
1960    180
1970    205
1980    227
1990    249
1998    269

L3 =ΔList(L2)█
```

The values in L3 represent the consecutive differences between the data in L2 which is the change in population.

```
L1      L2       L3     3
1940    132     20
1950    152     28
1960    180     25
1970    205     22
1980    227     22
1990    249     20
1998    269     12

L3(1)=20
```

Move to the bottom of L3 and enter 0 for the last entry.

```
L1      L2       L3     3
1960    180     25
1970    205     22
1980    227     22
1990    249     20
1998    269     12
2000    281     0
```

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Move to the top of L4 and press ϕ∞ε↓ℵ⊇⊇.

Press ⊆. Complete the data table showing the percent change in population rounded to tenths.