Example

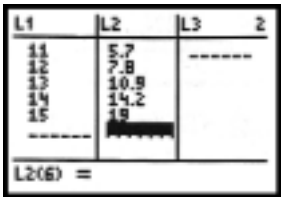
Compare the data and the model by graphing. Determine if the quadratic model is a good fit. (The year 1980 is set equal to zero for this data.)

Cellular Phone Industry

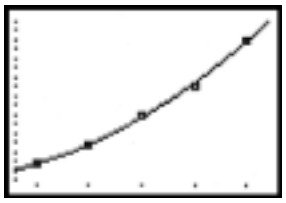
Year	**Revenue** (billions)
11	5.7
12	7.8
13	10.9
14	14.2
15	19.0

Source: *USA Today*

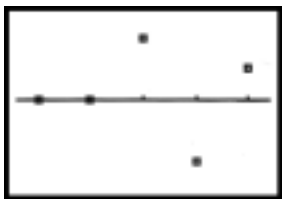
STEP 1: Enter the years in **L1**, and the revenues in **L2**.



STEP 2: To find a quadratic fit of **L1** and **L2**, press STAT ▶ **5** 2nd [**L1**] , 2nd [**L2**]* ENTER . Store this fit as **Y1** by pressing Y= CLEAR VARS **5** ▶ ▶ **1**. Press 2nd [STATPLOT] **1** ENTER to turn on **Plot1**. Select the scatter plot at **Type:**; press 2nd [**L1**] at **Xlist:** and 2nd [**L2**] at **Ylist:**. Press ZOOM **9** to see the data and the fit.



STEP 3: When the TI-83 finds any fit, it stores the residuals in the list **RESID**. Plot the residuals by pressing 2nd [STATPLOT] **1**. Move the cursor to **Ylist:** and press 2nd [LIST] and select **RESID**. Press ZOOM **9**. Since the pattern is random and does not resemble any function, the model is a good fit.



*Note: By default, the TI-83/TI-83 Plus looks for **Xlist** and **Ylist** in **L1** and **L2**, respectively. Therefore **L1** and **L2** do not need to be included in the command 'QuadReg'.

Exercises

Graph the data and the suggested model to fit. Tell whether the fit is a good fit.

1. Linear:

Growth of Cellular Phone Customers

Year (1980 = 0)	**Customers** (millions)
11	7.6
12	11.0
13	16.0
14	24.5
15	33.8

Source: *USA Today*

2. Cubic:

World Copper Production

Year (1980 = 0)	**Copper** (millions of tons)
5	9.2
7	9.6
9	9.9
11	10.0
13	10.4

Source: *USA Today*