CHAPTER

11

Multiple Regression

calculator keys

Multiple Regression Using A2MULREG

First, enter the data values for your dependent variable *Y* and your independent *X* variables into matrix variable [**D**]. To do this:

- Press [**2nd**][x^{-1}][◀] and then press [**ENTER**] and select **4**:[**D**] to display the MATRIX[D] screen.

- Type the number of rows, press [▶], type the number of columns, and press [▶]. (The number of rows will be the number of data values for each variable and the number of columns will be the number of independent variables plus 1.)

- In the table-like entry area that appears, enter the values for your dependent variable *Y* in the *first* column. Then enter the values for the independent variables in the subsequent columns. (Press [**ENTER**] after each entry.)

- When your data entry is completed, press [**2nd**] [**MODE**].

Next, use the Section AC3 instructions in Appendix A to load the **A2MULREG** program. When the program is loaded, press [**PRGM**] (to display the EXEC menu) and select the **A2MUL-REG** choice and press [**ENTER**]. The program begins and displays the prompt **prgmA2MULREG**. Press [**ENTER**] to display a second screen (which reminds you that data must be already entered into matrix variable [**D**]) and press [**ENTER**] a second time to display the **MULT REG+CORR** screen. Select **1:MULT REGRESSIO** and press [**ENTER**] to begin the multiple regression analysis. Continue with these steps:

- Type the number of independent *X* variables and press [**ENTER**] as the answer to **HOW MANY IND VAR?** (Type **2** and press [**ENTER**], if you are using the moving company study multiple regression data.)

- Always type **2** and press [**ENTER**] as the answer to **COL. OF VAR. 1?**.

- For each consecutive **COL OF VAR.** question, enter the proper column number. For example, type **3** and press [**ENTER**] as the answer to **COL. OF VAR. 2?**

After answering the COLumn OF (independent) VARiable questions, the program will display results. Press [**ENTER**]. When you are finished viewing the results, press [**ENTER**] to display a screen labeled MAIN MENU.

From the MAIN MENU screen, you can calculate confidence interval estimates and prediction intervals (not discussed in this book) for the multiple regression, perform a residual analysis (see the next Calculator Keys), begin a new multiple regression model, or end the program. To end the program, select **4:QUIT** and press [**ENTER**].

calculator keys

Residual Analysis Using A2MULREG

From the MAIN MENU screen of the **A2MULREG** program (see preceding **Calculator Keys**), select **2:RESIDUALS** and press [**ENTER**] to display the RES OR STAND RES screen. (You may get the "Busy screen" while the calculator prepares for the analysis.) In this screen, select **1:RESIDUAL PLOT** and press [**ENTER**] to display the PLOT OF RESID screen. In this screen:

- Select **1:VS YHAT.** and press [**ENTER**] to display a plot of the residuals versus the predicted *Y* values.
- Select **2:VS AN IND VAR.** and answer the question **WHAT COL?** to display a plot of the residuals and a specific independent *X* variable.

To exit a plot screen, press [**ENTER**], which returns you to the RES OR STAND RES screen from where you can continue with another plot or quit the program (by selecting **5:QUIT** and pressing [**ENTER**]).

A2MULREG residual analysis contains other features, such as being able to calculate the Durbin-Watson Statistic, which are beyond the scope of this book. More information about using **A2MULREG** can be found on the Texas Instruments Education Technology website, **education.ti.com**.