

Collecting Acceleration Data Using a Calculator

OBJECTIVES

Use an accelerometer to analyze the motion of an object.

MATERIALS

LabPro interface
TI Graphing Calculator

DataMate program
Vernier Low-g Accelerometer

PROCEDURE

1. Connect the Vernier Low-g Accelerometer to Channel 1 of the LabPro unit. Use the link cable to connect the TI Graphing Calculator to the interface. Firmly press in the cable ends. The arrow on the Accelerometer should be pointing in the direction you designate as the positive direction.
2. Turn on the calculator and start the DATAMATE program.

For a TI-73, TI-82, or TI-83 Calculator: Press the **PROGRAM** button, then press the calculator key for the number that precedes DATAMATE, (usually 1). Press the **ENTER** button. An introductory screen will appear, followed by the main screen.

For a TI-83 Plus Calculator: Press the **APPS** button, then press the calculator key for the number that precedes DATAMATE. Press the **ENTER** button. An introductory screen will appear, followed by the main screen.

For a TI-86 Calculator: Press the **PROGRAM** button, press the **F1** button to select <NAMES>, and press the menu key that represents DataMate. (<DATAM> is usually the **F1** button). Press the **ENTER** button and wait for the main screen to load.

3. The screen displays the Accelerometer and its current reading. When the unit of units is set up in DATAMATE for the sensor's primary, do the following:

- a. Select **SETUP** from the main screen.
- b. Press **ENTER** to select **CH1**.
- c. Select **SEE MORE** to bring up another list of options which includes **ACCELEROMETER**.
- d. Choose **ACCELEROMETER** from the **SELECT SENSOR** list.
- e. Choose **LOW-G ACCEL** from the **ACCELEROMETER** list.
- f. Select **OK** to return to the main screen.

Next you will zero the accelerometer. To do this, place the accelerometer on a level surface.

- a. Select **SETUP** from the main screen.
- b. Select **ZERO** from the setup screen.
- c. Select **CH1** from the **SELECT CHANNEL** screen.
- d. Wait for the acceleration reading on the screen to stabilize, and then press the **ENTER** button.

5. Now you are ready to begin collecting acceleration data. Make sure the accelerometer is oriented properly (arrow pointed in the positive direction). Select **START** to begin collecting data.
6. When data collection has finished, your graph will be displayed. Trace across the graph with the cursor keys to examine the data you collected.