
Table of Contents

Computer Projects for Middle Schools: An Introduction	4
How to Use the CD-ROM	5
Lab #1 Introduction to Spreadsheets:	
The Multiplication Table	6
Lab #2 Introduction to Computer-Assisted Drawing:	
How to Read a Ruler	14
Lab #3 Introduction to Databases:	
Technology and Invention Database	25
Lab #4 Introduction to Spreadsheets:	
Human Population Growth	36
Lab #5 Intermediate Spreadsheets:	
Water on Planet Earth	50
Lab #6 Intermediate Computer-Assisted Drawing:	
National Weather Maps	64

Table of Contents *(cont.)*

Lab #7 Intermediate Databases:

Major Agricultural Crops of the U.S. 74

Lab #8 Intermediate LOGO Programming:

The Obstacle Course. 87

Lab #9 Advanced Computer-Assisted Drawing:

Latitude and Longitude. 97

Lab #10 Advanced Spreadsheets:

Household Electrical Use 105

Lab #11 Advanced Spreadsheets:

Unit Conversion Calculator 121

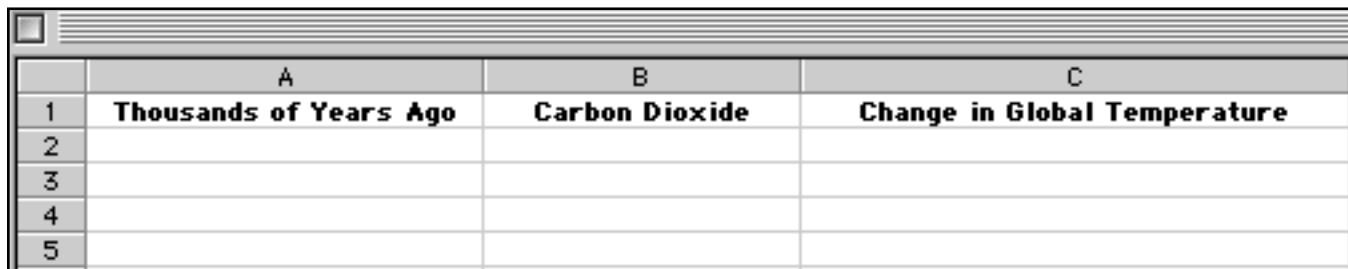
Lab #12 Advanced Spreadsheets:

Global Climate Change. 133

Lab #12 *(cont.)*

Microsoft Excel Section

1. Introduce this activity by explaining to your students that they will use a spreadsheet to analyze data on atmospheric carbon dioxide concentration and global temperature. Scientists have long believed that there is a relationship between global temperature and atmospheric carbon dioxide. By studying gas bubbles trapped in glacial ice, researchers have created a record of global temperature change and atmospheric carbon dioxide concentration for the past 160,000 years. Explain to your students that they will take these records and analyze them to see if any relationship exists between carbon dioxide and global temperature. They will create colorful line charts to help them analyze the data.
2. Begin this activity by having your students open a new workbook document in *Microsoft Excel*. Instruct them to click in cell A1 and type the label (*Thousands of Years Ago*).
3. Next, students should press the **Tab** key on their keyboards, which will move them to cell B1. In this cell, they should type the next label (*Carbon Dioxide*). Have them press the **Tab** key once again to move them into cell C1, where they will type (*Change in Global Temperature*).
4. Once they have entered all three of the labels, your class should change the font style to bold, adjust the column width, and center all of the labels in each cell. Their spreadsheets should resemble the one in Figure 4.



	A	B	C
1	Thousands of Years Ago	Carbon Dioxide	Change in Global Temperature
2			
3			
4			
5			

Figure 4. Completed Global Climate Change column labels

5. Next, instruct your class that they should use the **Fill** command to automatically enter the numbers into the (*Thousands of Years Ago*) column. Explain to them that the **Fill** command is used to automatically enter into specified cells data like numbers, dates, months, and times.
6. Instruct your class to click into cell A2, enter (160), and then press the **Return** or **Enter** key on their keyboards. Next, have them click into cell A2 once again. They should then go to the **EDIT** menu, select **Fill**, and then choose **Series**. This will bring up the **Series** window, where they should choose **Columns** under the **Series In** section. Under the **Type** section, they should select **Linear**. They should set the **Step Value to (-10)** and the **Stop Value to (0)**. Finally, they should click the **OK** button. The selected cells of column A should have been automatically filled, beginning with 160 in cell A2 and ending with 1 in cell A18.

Lab #12 (cont.)

7. Now students can begin to enter from the data sheet the data for both carbon dioxide and change in global temperature for each year listed in their spreadsheets.
8. Once your students have finished entering their data, they should center all of the numbers in each cell, and their spreadsheets should resemble the one shown in Figure 5.

	A	B	C
1	Thousands of Years Ago	Carbon Dioxide	Change in Global Temperature
2	160	1.95	-9
3	150	2.05	-9.5
4	140	2.3	-7.5
5	130	2.95	-2
6	120	2.8	-2.5
7	110	2.7	-7
8	100	2.4	-4
9	90	2.4	-6.5
10	80	2.3	-5
11	70	2.4	-6.5
12	60	1.95	-7.7
13	50	2.18	-7.5
14	40	1.9	-7
15	30	2.2	-9
16	20	1.95	-10
17	10	2.55	-0.5
18	0	3.6	2.5
19			

Figure 5. Data entered into carbon dioxide concentration and global temperature columns

9. Next, instruct your students to use the **Chart Wizard** to make a chart from the data they have just entered into their spreadsheets. Have your students choose the **INSERT** menu, and select **Chart**. They can also select the **Chart Wizard** by clicking the **Chart Wizard** button on their toolbar.
10. Now they should choose **Line** from the **Chart Type** list, and select the **Line with markers displayed at each data value** chart from the **Chart sub-type** list. The first page of the **Chart Wizard** can be seen in Figure 6.