



Section 3

Spreadsheet Software

While word processing is the most common type of software in businesses and homes, **spreadsheets** follow closely behind, partly because they are so versatile, and partly because they can perform such amazing and time-saving operations.

Often people have the mistaken idea that spreadsheets are only for people who are heavily involved in complex financial calculations and analyses. Teachers, librarians,

students, salesmen, manufacturers, and many more people can make valuable use of spreadsheet programs.

Again, this section only begins to scratch the surface of what spreadsheets can do. A spreadsheet cannot think, but if it can be told what to do in language it has been programmed to understand, the possibilities are multitudinous.

Section 3 Objectives

After you complete this section, you will be able to –

- describe four broad advantages of using spreadsheet software.
- tell how to move around inside a spreadsheet.
- explain how cells are named.
- explain what a range is and how it can be used to an advantage.
- produce meaningful formulas.
- explain and demonstrate the rules of precedence.
- write and use the SUM, AVG, COUNT, IF, MIN, and MAX functions.
- tell how date functions can be used.
- define major types, parts, and purposes of a graph.
- draw an appropriate graph from spreadsheet data.
- tell how a spreadsheet can be used as a database.

Lesson 9



Why Use Spreadsheet Software?



Terms to Know

cell. The intersection of a particular column and row; basic building block of a spreadsheet.

column. A vertical group of cells, designated by a letter (or letters) of the alphabet.

Lesson 9

recalculate. To calculate again, especially after there has been a change to a cell in a spreadsheet.

row. A horizontal group of cells, designated by a number.

spreadsheet. An electronic grid of columns and rows.

what-if analysis. Using a spreadsheet that has been set up with formulas to answer questions based on varying situations.

Just as word processors specialize in words, spreadsheets specialize in numbers, and therefore they have the reputation for being useful in applications dealing largely with numbers. But they are not limited to numbers. They can do much more!

In simplest terms, a spreadsheet is an electronic method of dealing with anything that has a **column** and **row** format. That opens the door for many things. Think of how many things you use on a daily basis that could fit into that category. Grocery lists, parts lists, price lists, tables of contents, zip code directories, telephone directories, grade books, and class schedules are just a few examples.

If you've ever kept track of personal expenses, you may have done something like this:

Each month you entered a total of what you spent in each category. At the end of each row you added together everything for that month. In the beginning this spreadsheet served your purposes well. Then in

My Expenses

	Fun	Gifts	Tithe	Other	Total
Jan.	6.32	4.67	3.00	2.60	16.59
Feb.	14.30	8.77	4.50	0.00	27.57
Mar.	3.28	5.33	2.39	6.87	17.87
Apr.					
May					
June					
July					
Aug.					
Oct.					
Nov.					
Dec.					
Totals					

April when you got a driver's license, your parents said you would need to pay for some of the gas for the car. That called for another column called *Gas*, preferably between *Fun* and *Gifts* to keep the columns alphabetical, but that would mean redoing the whole thing. You could put *Gas* after *Total*, but that doesn't seem right. However, with spreadsheet software, this situation can be fixed quickly and easily. This is one major reason people use the software.

Editing and formatting changes are very easy, just as they are in word processing. In the above chart of money spent by the month and by category, it would be very easy, when using an electronic spreadsheet, to simply insert another column for *Gas* between *Fun* and *Gifts*. The columns to the right with all their information simply move over and make room for the new one. The same could be said for a row. Did you notice that September was missing in the handwritten spreadsheet? With a spreadsheet it is easy to insert rows and columns. You could also insert a row after June and have the spreadsheet calculate a six months' total. Spreadsheet software is designed to allow columns and rows to be inserted or deleted with ease.



MY EXPENSES						
	Fun	Gas	Gifts	Tithe	Other	TOTAL
Jan.	6.32		4.67	3.00	2.60	16.59
Feb.	14.30		8.77	4.50	0.00	27.57
Mar.	3.28		5.33	2.39	6.87	17.87
Apr.	3.39	5.00	3.89	5.20	4.52	22.00
May	6.80	5.00	11.78	4.60	0.00	28.18
Jun.	2.20	5.00	10.59	3.20	5.90	26.89
Jul.	0.00	5.00	2.56	3.80	4.76	16.12
Aug.	5.60	5.00	15.78	3.20	0.00	29.58
Sep.	0.00	5.00	3.10	2.20	11.00	21.30
Oct.	0.00	5.00	2.90	4.40	0.00	12.30
Nov.	2.00	5.00	4.25	1.80	4.36	17.41
Dec.	0.00	5.00	22.00	3.50	2.98	33.48
TOTALS:	43.89	45.00	95.62	41.79	42.99	269.29

In addition, it is easy to make changes to any of the entries you make each month in case you typed a number incorrectly. Column widths can be changed to accommodate different types of entries.

Mathematical spreadsheets also use formulas to perform amazing feats. But they do not work by themselves, and they work only according to strict rules. A formula may look as if it is done properly, but if it is not made using the rules of the software, the answer will not be what the user expected. Remember—computers will do what you tell them, and that may not necessarily be what you meant. Careful thought and planning must go into making correct formulas.

Once the formulas are set up, the spreadsheet is ready for some **what-if analysis**. What-if analysis means that you can change the values in certain **cells** of the spreadsheet to see how the change will affect the rest of the values. Notice the above worksheet for a simple example. By typing \$12.83 into the cell designating gifts bought in February instead of the \$8.77 that is there now, you can see how it will affect the total for the month as well as the total spent on gifts for the year. The spreadsheet will **recalculate** automatically the formulas that are in the total cells. By typing in a new number, you are essentially saying, “What if I spend \$12.83 for gifts in February instead

of \$8.77? How will that affect expenditures for the month of February? How will that affect the year? How will that affect the total amount I spend on gifts?” What-if analysis can help you plan your spending for the coming year.

Spreadsheets can make graphs from columns and rows of numbers. Look at the spreadsheet of LightUnit scores on the next page. Then look at the line graph made from it. Which is easier to read and understand quickly? In which is it easier to make comparisons between the numbers?

Spreadsheets make handy databases. Remember when you were studying word processing and mail merge? The secondary document was a database of friends’ names and addresses.

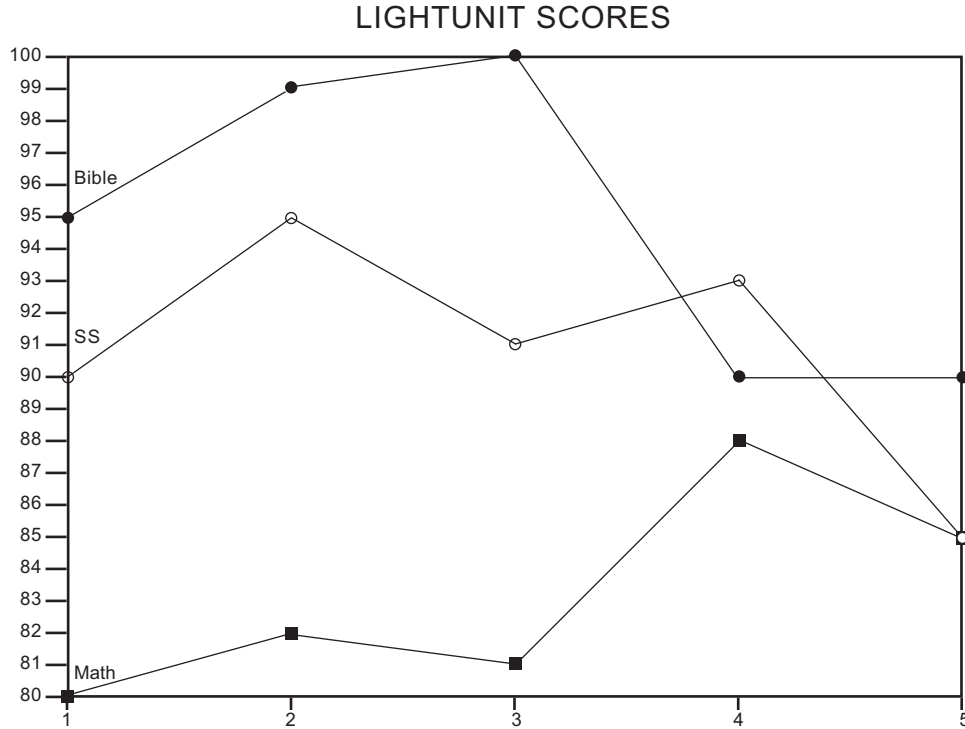
Although word processing software is not an expert at handling databases, it can do them. The same could be said of spreadsheet software; it is not a database expert, but in some situations, a spreadsheet might do the job even better than a complicated, specialized database program. (You will learn more about databases in the next LightUnit.) A database of library books in a worksheet might look like the one at the bottom of the next page.

Have you noticed how the same operations (in the above case, databases) can be done in different programs? The methods

Lesson 9

LIGHTUNIT SCORES					
Subject	1	2	3	4	5
Math	80	82	81	88	85
SS	90	95	91	93	85
Bible	95	99	100	90	90

Spreadsheet



Line Graph

may be different, and the types of data manipulation you can perform may vary; but this illustrates an important concept. Although different programs can do the same operations, each one has operations that it specializes in. Choose the software that will serve your purpose best and do the

job most efficiently. For this reason it is a good practice to have a general understanding of several types of software so you can make an informed decision about which one is best to use in any given situation.

TITLE	AUTHOR	PRICE
<i>Five Loaves</i>	Toews	10.95
<i>For One Moment</i>	Kauffman	5.95
<i>Coals of Fire</i>	Bauman	7.95
<i>Awaiting the Dawn</i>	Hoover	4.25
<i>Thrilling Escapes</i>	Lee	11.30

**Complete the sentences.**

1. A vertical group of cells is called a _____ .
2. A horizontal group of cells is called a _____ .
3. Spreadsheets can _____ totals every time a cell is changed.
4. This makes it easy and automatic to do _____ analyses.
5. New _____ or _____ can be easily inserted at any time.

**Circle the letters of four advantages of using electronic spreadsheets.**

6. a. easy editing and formatting
- b. comes up with all answers automatically
- c. can be used for what-if analyses
- d. totally eliminates possibility of error
- e. uses formulas to perform amazing operations
- f. can make graphs to make understanding the spreadsheet easier
- g. can work with words even better than word processing programs

**Write true or false.**

7. _____ Spreadsheets are “specialists” when it comes to numbers.
8. _____ Spreadsheets do not do well with items in columns and rows.
9. _____ Word processing software and spreadsheet software can both deal with data-bases.
10. _____ The same task may be accomplished by more than one piece of software.
11. _____ A formula will always give the answer you want.
12. _____ A record of categories of expenses by month is a good use for a spreadsheet.
13. _____ Everything about a spreadsheet is automatic.
14. _____ Graphs are sometimes more easily understood than mere columns of numbers.

LOOKING BACK . . .**Write *p* (primary document), *s* (secondary document), or *r* (record).**

- | | |
|--|---|
| 15. _____ The set of information about one entity. | 18. _____ List of names, addresses, etc. |
| 16. _____ One person's name and address. | 19. _____ The form letter. |
| 17. _____ The main document that all the documents will look like. | 20. _____ The list of things to be merged into the main document. |



Follow the directions.

21. Explain what mail merge is especially good at doing. _____

22. Give the three steps of using mail merge. _____

Lesson 10



Entering, Editing, and Formatting Data



Terms to Know

cell address. The name of the column and the row where a cell is located.

cell pointer. The cell-sized highlight appearing on the screen and the point at which any typing will take place.

grid. An area marked off in rows and columns.

range. A designated rectangular area of a spreadsheet; can include a few or many cells.

A spreadsheet is made entirely of a **grid** of columns and rows. Look at the blank one at the top of the next page.

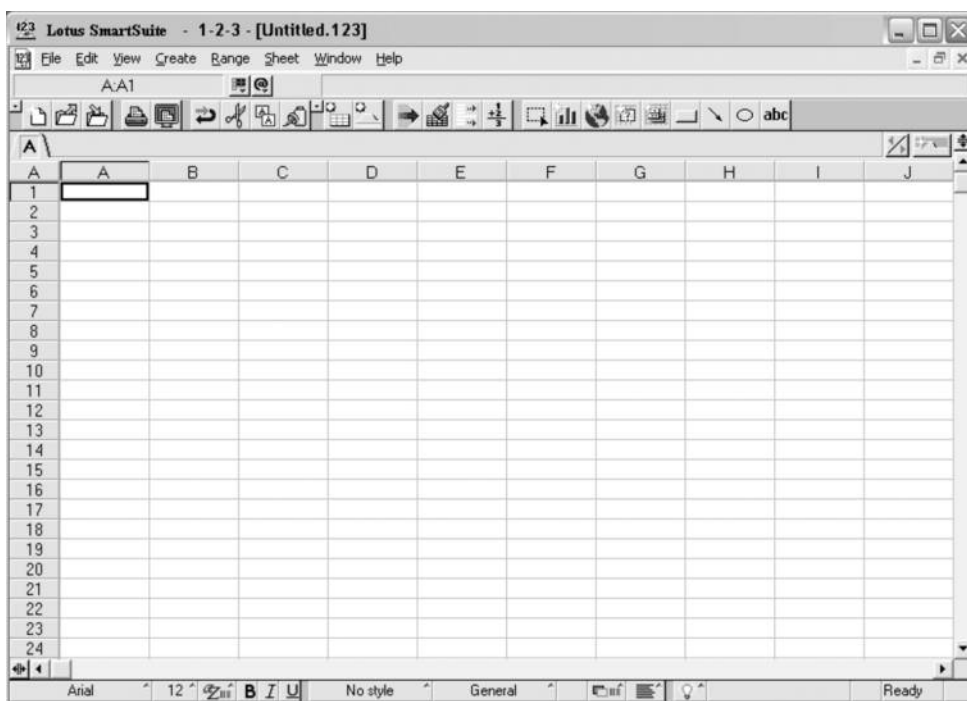
Each column and row has a name. The columns are identified by the letters of the alphabet. Some spreadsheets have as many as 256 possible columns. Obviously something must be done to name the columns

past Z. That is done by calling the twenty-seventh column AA, the twenty-eighth column AB, the twenty-ninth column AC, and so forth. The next set of columns are named BA, BB, BC, etc. The rows are identified by numbers. Spreadsheets may have the capability of dealing with tens of thousands of rows.



What would be the names of these columns?

1. 53rd column _____
2. 80th column _____
3. 156th column _____



Located at the intersection of every column and row, a cell is the basic building block of a spreadsheet. In other words, the entire spreadsheet is made of these cells. Each cell has a specific location on that grid, known as the **cell address**. The cell address is the name of the column and the row where the cell is located. For example, the following addresses are all valid: A1, B52, DE456, or IV20000. When there is more than one letter in an address, the first letter cannot go higher than *I*. Therefore the following address is invalid: XY27.

At any given time, you can see only a small portion of the spreadsheet, perhaps only twenty rows and five or six columns (depending on how wide they are). So to find out what else is in the spreadsheet, use the cursor keys to move the **cell pointer** to other cells. The heavy black rectangle in cell A1 in the illustration above is called the cell pointer and shows in which cell your typing will be entered. The cell pointer can be moved by clicking the mouse on another cell or by using the keyboard. Other keys in addition to the cursor keys can move the cell pointer to different cells. For example:

Page Up
Tab

Page Down
Home

Ctrl and Home together
Ctrl and End together
Shift and Tab together

At the top of page 36 is part of a spreadsheet that starts in cell A1 and ends in D135. The part shown starts with cell A24 and ends with cell D47. Notice the location of the cell pointer. *Compare each of the screens that follow with this one.* Notice where the cell pointer has moved.

The Up Arrow key moves the cell pointer up one cell; the Down, Left, and Right Arrow keys also move the cell pointer one block in that direction.

A group of cells in a spreadsheet can be referred to collectively as a **range**. Many times you will want to deal with groups of cells, such as when you want to add the contents of several cells together. Each spreadsheet software has its own way of designating a range, but if you know the address of the cell in the upper left corner of the range and the one in the lower right corner, you have defined the whole range. For example, the range A1:C3 includes the cells A1, A2, A3, B1, B2, B3, C1, C2, and C3. See how "A1:C3" is a shortcut way of designating the entire range? A range is always a four-sided shape.