Computing is often referred to as 'information-processing', and to make information clear and understandable it must be well laid out on the printed page. This topic was partly dealt with in chapter 5, where the method of inserting words into a computer printout was described. This was, in fact, only part of the story, since it did not cover the methods we use to arrange the placing of numbers in exactly the positions we require. Two simple methods will serve to start with. These involve the use of the comma and the semicolon.

If an output line consists of several variables separated by commas in a statement such as

\[ \text{PRINT} \ X, Y, Z \]

then the spacing between the values of X, Y and Z will be wide when they are printed out. If we separate the variables in the list with semicolons

\[ \text{PRINT} \ X; Y; Z \]

then the numbers will be placed far closer together. This is shown in example 7.1.

```
* 10 READ X, Y, Z
* 20 PRINT X, Y, Z
* 30 DATA 23.4, 567.89, 123.21
* 40 END
* RUN
  23.4  567.89  123.21
END AT 0040
* 20 PRINT X; Y; Z
* RUN
  23.4  567.89  123.21
END AT 0040
*  
```

Example 7.1

Example 7.2 shows the effect of commas and semicolons even more clearly, since the PRINT statement contains both numbers and words to be printed out. By separating the words and numbers with semicolons rather than commas the output looks far more like the printed page in a book.

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Example 7.2

Example 7.3 shows how we can print a table with headings by carefully selecting the use of commas and semicolons.

Notice also that the additional PRINT statement is used in the program to provide an additional blank line and so stops all the output being crowded together.

BASIC always does several operations when it executes a PRINT instruction. First of all the carriage of the teleprinter returns to its extreme left-hand position, then the paper is moved up one line and finally the values of the variables in the output list are printed. When a PRINT is by itself on a line there is no variable list and so only the carriage return, line feed is performed.

If an output list finishes with a semicolon or a comma, sometimes called a 'hanging comma' then when the next PRINT is encountered the carriage return, line feed is not carried out and the printing is continued from where the last item was...

Example 7.3