RIGHT$ (to remove a specified number of characters from the right of the string). We will not discuss in detail exactly how these functions work at the moment. We will take a more comprehensive look at functions in BASIC in the next part of the course.

4. SORT

SORT, and the SWAP subroutine called from within it, follow closely the routines used last time.

5. PRINT NAMES

This is very straightforward:

```
FOR Q = 1 TO N
PRINT A$(Q)
NEXT Q
RETURN
```

Now all that remains is to write the main program. It's as simple as this:

```
REM MAIN PROGRAM
GOSUB [FINDNUM]
GOSUB [ENTER]
GOSUB [SORT]
GOSUB [PRINT]
END
```

We have put the 'names' of the subroutines in square brackets. A few BASICS are able to call subroutines by name, but most have to use line numbers. When the program is actually written out, the appropriate line numbers are inserted in place of the subroutine names. Appropriate REMs and PRINT messages are also added.

Exercises

Now that we have covered almost all of the most important features of BASIC, it is time to check your progress by working through these exercises. They range in difficulty from the very easy to the moderately difficult.

■ **Variables** Put a circle around the expressions below that are valid numeric variables, and draw a cross through the expressions that are not valid variable names at all. Leave the valid string variable names unmarked.

A B6 2Z D$ 15 X$ A12 D9 Q81 Q5 6F H$

■ **Arithmetic 1** Write a short program to assign the value 6 to variable B and then PRINT the value of B.

■ **Arithmetic 2** Write a short program to assign the value 5 to variable A, 7 to variable B and 9 to variable C. Add the values of these three variables and assign the sum to variable D. PRINT the value of variable D.

■ **Arithmetic 3** Look at these lines of BASIC and then work out what the value of C will be.

```
LET C = 5 + 4 * 3
PRINT C
```

```
10 REM  THIS PROGRAM SORTS NAMES
20 REM  INTO ALPHABETICAL ORDER
30 PRINT "FIRST DECIDE HOW MANY"
40 PRINT "NAMES YOU WANT TO ENTER"
50 PRINT "THEN ENTER THE NAMES IN"
60 PRINT "FIRSTNAME(SPACE)LASTNAME"
70 PRINT "ORDER."
80 REM
90 REM  THIS IS THE MAIN PROGRAM
100 PRINT
110 PRINT
120 GOSUB 250
130 GOSUB 400
140 GOSUB 1000
150 GOSUB 2000
160 REM
170 REM  END OF MAIN PROGRAM
180 END
250 REM  SUBROUTINE TO FIND NO. OF
260 REM  NAMES TO BE ENTERED
270 PRINT "HOW MANY NAMES DO YOU"
280 PRINT "WISH TO ENTER?"
290 PRINT
300 INPUT N
310 DIM A$(N)
320 RETURN
400 REM  SUBROUTINE TO ENTER NAMES
410 PRINT "ENTER NAME IN THIS FORM:"
420 PRINT "FIRSTNAME(SPACE)LASTNAME(CR)"
430 PRINT "E.G. JILL THOMPSON"
440 FOR X = 1 TO N
450 PRINT "ENTER NAME"
460 INPUT A$(X)
470 GOSUB 500
480 NEXT X
490 RETURN
500 REM  SUBROUTINE TO REVERSE ORDER OF NAMES
510 LET L = LEN(A$(X))
520 LET S = INSTR(A$(X)," ")
530 LET C$ = LEFT$(A$(X),S - 1)
540 LET F$ = RIGHT$(A$(X),L - S)
550 LET F$ = F$ + ", "
560 LET A$(X) = F$ + C$
570 RETURN
1000 REM  SORT ROUTINE
1010 LET S = 0
1020 FOR P = 1 TO N - 1
1030 IF A$(P)> A$(P + 1) THEN GOSUB 1100
1040 NEXT P
1050 IF S = 1 THEN GOTO 1000
1060 RETURN
1100 REM  SWAP SUBROUTINE
1110 LET T$ = A$(P)
1120 LET A$(P) = A$(P + 1)
1130 LET A$(P + 1) = T$
1140 LET S = 1
1150 RETURN
2000 REM  PRINT SUBROUTINE
2010 PRINT
2020 FOR Q = 1 TO N
2030 PRINT A$(Q)
2040 NEXT Q
2050 RETURN
```