17. Using ROUNDED

Generally, if the answer to a calculation cannot be accurately stored in the field set aside for it, then it will be truncated.

e.g.(1) Suppose the following fields are defined:

```
01    NUMBER1  PIC  999.
01    NUMBER2  PIC  999.
01    ANSWER   PIC  999.
```

If NUMBER1 contains 029 and NUMBER2 contains 010, the statement DIVIDE NUMBER2 BY NUMBER1 GIVING ANSWER should result in 2.9 - however, as there is no space for the decimal fraction, this will be truncated to 2.

If the statement is amended to DIVIDE NUMBER2 BY NUMBER1 GIVING ANSWER ROUNDED, then the answer will be rounded off to 3 (which is nearer the accurate answer).

COMPUTE ANSWER ROUNDED = NUMBER2 / NUMBER1 will have the same result.

e.g.(2) Suppose the following fields are defined:

```
01    NUMBER1  PIC  9V9.
01    NUMBER2  PIC  9V9.
01    ANSWER   PIC  9V9.
```

If NUMBER1 contains 0.3 and NUMBER2 contains 0.6, then the statement MULTIPLY NUMBER1 BY NUMBER2 should result in the answer 0.18. However, there is insufficient space to hold this accurately so it will be truncated to 0.1.

If the statement is amended to MULTIPLY NUMBER1 BY NUMBER2 GIVING ANSWER ROUNDED, then the answer will be rounded off to 0.2 (which is nearer 0.18)

ROUNDED can be used with any arithmetic operation.

Exercises

Suppose the following data definitions:

```
01    NUM1     PIC  999.
01    NUM2     PIC  999.
01    NUM3     PIC  999.
01    NUM4     PIC  999V9.
```

Calculate the result of each of the following if NUM1 = 039, NUM2 = 010.

a) DIVIDE NUM1 BY NUM2 GIVING NUM3.
b) DIVIDE NUM1 BY NUM2 GIVING NUM4.
c) DIVIDE NUM1 BY NUM2 GIVING NUM3 ROUNDED.