RPG IV

Determining the Size of Receiving Fields

When performing arithmetic, you must make certain that the receiving field is large enough to accommodate the result. With addition, determine the largest quantity that can be stored in each field and manually perform an addition. Use the result to determine how large the receiving field should be. With subtraction, manually subtract the smallest possible number form the largest possible number to determine how large to make the receiving field.

As a general rule, the number of integer positions in the receiving field of a multiply operation should be equal to the sum of the integers of the operands being multiplied. Suppose we code MULTIPLY QTY BY PRICE GIVING TOTAL. If QTY has a field size of 2 and PRICE has a field size 3, then to ensure that TOTAL is large enough to accommodate the result it should have a field size of 5, which is the sum of the two integers in QTY plus the three integers in PRICE. The number of decimal positions in the receiving field will depend on the decimal precision desired in the result.

For divide operations, the size of the quotient or receiving field is dependent on the type of divide. Consider the following: DIVIDE PRICE BY QTY GIVING COST. If PRICE and QTY have field size of 1 the receiving field may have field size of 9V99 or 9V9, to allow for decimal values (e.g.,3/6 = .5). But suppose PRICE has field size of 9V9 and contents of 9.0, and QTY has the same field size with contents of .1. The result of the divide is 9/.1, which is equal to 90. Hence COST would need a field size of 2. As a rule, determine the range of values that the fields can have and code the field size of the receiving filed accordingly.

Examples to Help Determine the Size of a Resultant Field

Arithmetic Operation		Example	A General Rule of Thumb
1.	Addition	999 +999 1998	Resultant field should be one position larger than the largest field being added.
2.	Subtraction	999 - 1 998	Resultant field should be as large as the field being subtracted from, if a smaller number is subtracted from a larger number.
3.	Multiplication	999 x999 998001	Resultant field size should be equal the sum of the lengths of the operands being multiplied.
4.	Division	9990 .1| 999	To be safe, the resultant field size should equal the sum of the number of digits in the divisor and dividend.