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HOW TO SOLVE WORD ARITHMETIC / WORD MATH

```
              K I D      0 ____
       ______________
COOK | L A C K I N G     1 ____
       L O N G D         2 ____
       ---------         3 ____
         O K A L N       4 ____
         O O A D N       5 ____
         ---------       6 ____
           L G A B G     7 ____
           L G C K K     8 ____
           ---------     9 ____
               L D A
```

If you're not familiar with long division, the puzzle will be much more difficult. We suggest finding a math textbook at your local library to familiarize yourself with this style of division. Once accustomed to solving division problems in this fashion, you'll see that all four basic mathematic methods are used—addition, subtraction, and multiplication, as well as division.

In this sample puzzle, note that there are 3 different subtraction problems:

```
L A C K I     O K A L N     L G A B G
L O N G D     O O A D N     L G C K K
---------     ---------     ---------
  O K A L       L G A B         L D A
```

First, examine the second subtraction problem. In the one's column of the second subtraction problem, N–N=B. Whatever N equals, B must be 0, since any number minus itself equals zero. Place a 0 over the B in the puzzle, and place a B next to the 0 at the right of the puzzle.

Notice, also, in the hundred's column, that A–A=G. Clearly, G cannot also equal 0, so you must assume that the subtraction to the right of A–A=G (L–D=A, in the ten's column) requires you to carry from the A (This also points out that L is less than D). In carrying from the top A, you now make the value of that letter one less, and you'll need to carry from the K in the thousands column. This leaves you a somewhat more complex equation: A–1+10–A=G. This can also be written A–A+10–1=G, and simplified to 9=G. No matter what A equals, G must equal 9. Place a 9 over each G in the puzzle, and place a G next to the 9 at the right of the puzzle.

Note that the puzzle can be divided into 3 multiplication problems:

```
  C O O K       C O O K       C O O K
x       K     x       I     x       D
---------     ---------     ---------
L O N G D     O O A D N     L G C K K
```

In the first multiplication problem, KxK=D. There are only a few possible combinations for this problem:

K x K = D	
0 x 0 = 0	-not possible, K and D must both equal 0
1 x 1 = 1	-not possible, K and D must both equal 1
2 x 2 = 4	
3 x 3 = 9	-not possible, G equals 9
4 x 4 = 6	(16)
5 x 5 = 5	(25) -not possible, K and D must both equal 5
6 x 6 = 6	(36) -not possible, K and D must both equal 6
7 x 7 = 9	(49) -not possible, G equals 9
8 x 8 = 4	(64)
9 x 9 = 1	(81) -not possible, G equals 9

Now you know that either K=2 and D=4, or K=4 and D=6, or K=8 and D=4. You also know that D equals either 4 or 6. Following this through to the third multiplication problem, we see that KxD=K. The possibilities are:

K x D = K
2 x 4 = 2 - no - 2 x 4 = 8
4 x 6 = 4 - yes - 4 x 6 = 4 (24)
8 x 4 = 8 - no - 8 x 4 = 2 (32)

Now we know that K is 4 and D is 6. Place a 4 over each K, and a 6 over each D in the puzzle, and place a K next to the 4 and a D next to the 6 at the right of the puzzle.

The third subtraction problem ends with G–K=A in the one's column. Since G=9 and K=4, A must equal 5. Place a 5 over each A in the puzzle, and place an A next to the 5 at the right of the puzzle.

Back to the second subtraction problem, where, in the ten's column, L–D=A, we can now determine that L–6=5. Working backwards, this can be written as 5+6=L (by the reflexive power of addition and subtraction). 5+6=11, so L=1. Place a 1 over each L in the puzzle, and place an L next to the 1 at the right of the puzzle.

Back again to the third subtraction problem, where, in the hundred's column, A–C=L. We know we have to carry one from the A to the B, so now we have A(–1)–C=L, or 5(–1)–C=1. This is the same as 4–C=1, so C must equal 3. Place a 3 over each C in the puzzle, and place a C next to the 3 at the right of the puzzle.

Now, to the first subtraction problem where, in the one's column, I–D=L. Since D=6 and L=1, I must equal 7. Place a 7 over each I in the puzzle, and place an I next to the 7 at the right of the puzzle.

Back to the second subtraction problem, where, in the thousand's column, K–O=L. We know we have to carry one from the K to the A, so now we have K(–1)–O=L, or 4(–1)–O=1. This is the same as 3–O=1, so O must equal 2. Place a 2 over each O in the puzzle, and place an O next to the 2 at the right of the puzzle.

All that's left are the N and the 8, so N must equal 8. Place an 8 over each N in the puzzle, and place an N next to the 8 at the right of the puzzle.

The puzzle is complete, and should look like this:

```
              4 7 6
        ___________
3 2 2 4 | 1 5 3 4 7 8 9
          1 2 8 9 6
          ---------
            2 4 5 1 8
            2 2 5 6 8
            ---------
              1 9 5 0 9
              1 9 3 4 4
              ---------
                  1 6 5
```

The word spelled out by the properly arranged letters is:

B L O C K A D I N G

We hope you were able to follow the above and find it of some assistance in solving Word Arithmetic/ Word Math. Best of luck and keep on puzzling.