DONALD+GERALD=ROBERT

DONALD

+ GERALD

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ROBERT

Given 'D=5' (If not given assume D=5 at initial stage)

6 5 4 3 2 1

D O N A L D

+ G E R A L D

c1 c2 c3 c4 c5

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R O B E R T

1. 'D=5' is assumed, so 'D+D=T' therefore 'T=0' & 'c5=1'.

2. In column 5 'O+E=O' as 'T=0' so E cannot be 0, therefore 'E=9'.

'O+9=O' is possible if 'c2=1'. Therefore 'c2=1'.

3. In column 3 'A+A=9', but addition of any 2 same number is

always even, given that addition is 9 which is possible when

there is carry. Therefore 'c4=1', so 'A=4'.

4. Remaining numbers to be assigned are {1,2,3,6,7,8} to {O,N,R,B,L,G}.

5. We have 'E=9' & 'c2=1' so from column 5 we get 'c1=1'. Also from

column2 we have 'L+L+c5=R' where 'c5=1' therefore R is odd so R can

be 1or3or7. As 'D+G' does not generate carry shown in column 6 so R

cannot be 1or3. Therefore 'R=7' & 'G=1'.

6. We have 'R=7' so from column 2 we have 'L+L+1=17', therefore 'L=8'.

7. From column 3 we get that 'A+A+c4=E' and so there is no carry,

therefore 'c3=0'.

8. From column 4 we get 'N+R+c3=B' we have R=7 & 'c3=0',

so 'N+7=10+B', therefore 'N=B+3'. {2,3,6} are remaining to be

assigned so to satisfy the constraint 'N=B+3' we get 'B=3' & 'N=6'.

9. And remaining 'O=2'.

SOLUTION:

5 2 6 4 8 5

+ 1 9 7 4 8 5

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7 2 3 9 7 0

VALUES:

D=5

O=2

N=6

A=4

L=8

G=1

E=9

R=7

B=3

T=0