

SEND + MORE = MONEY

Step ① understand the rules

- Each letter is a different number (0-9)
- No word starts with 0 ( $S \neq 0, M \neq 0$ )
- we must make the addition correct.

Step ② look at the first letter of the answer (M)

- Adding two 4 digits no's gives a 5 digit number
- That means there's a carry into 5<sup>th</sup> digit
- So  $M = 1$

Step ③ look at the first column ( $S + M$ )

- The left most column  $S + M = S + 1$
- This must give a number starting with  $M = 1$  in the answer
- That's only possible if  $S = 9$  (largest digit)

Step 4 - look at the 0

→ In MONEY, the 0 is the thousands place.

0 comes from  $S + M$  carry, and turns out  $0 = 0$

Step 5 - middle letters (E, N, R)

→ Working column by column with normal addition

rules:

- From  $N + R = E$  (with a carry), we find  $R = 8$
- E is just before N (so  $N = E + 1$ ).

Step 6 - Fill remaining letters.

→ Digits used so far:  $\{M = 1, S = 9, O = 0, R = 8\}$

Left over numbers:  $\{2, 3, 4, 5, 6, 7\}$ .

→ Pick values for E, N, D, Y that fit the column addition.



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step 7

Final solution.

$$S=9, E=5, N=6, D=7, M=1, O=0, R=8, Y=2$$

step 8: check

$$\begin{array}{r} \text{SEND} = 9567 \\ + \text{MORE} = 1085 \end{array}$$

$$\hline \text{MONEY} = 10652 \quad \checkmark \text{ correct}$$