Exercise 7.1

The constraints for this riddle are:

V(D) + V(E) = V(Y) or (V(D) + V(E)) % 10 = V(Y)  
V(N) + V(R) + t(V(D) + V(E)) = V(E) or (V(N) + V(R) + t(V(D) + V(E))) % 10 = V(E)  
V(E) + V(O) + t(V(N) + V(R)) = V(N) or (V(E) + V(O) + t(V(N) + V(R))) % 10 = V(N)  
V(S) + V(M) + t(V(E) + V(O)) = V(O) or (V(S) + V(M) + t(V(E) + V(O))) % 10 = V(O)

V(M) = r(V(S) + V(M))

With v(x) defined as the digit belonging to a letter x and t(a + b) from {0, 1} as the transfer, e. g. t(7 + 8) = 1; t(2 + 3) = 0.

**Manual constraint solving**

Human approach:

* First ignore all words containing letters that no other word starts with.
* Then start with the first line and the left column. So two words starting with the same letter are needed, e. g. add + ado.
* Now multiple combinations can be tested, more or less systematic. Putting in one new word will create new conditions for the remaining lines and columns.
* Finally one solution will be found. If not, new starting words for the first line and column are needed.