

Each of the different letters below stands for a different number.

$$\begin{array}{r}
 \text{TWO} \\
 + \text{TWO} \\
 \hline
 \text{FOUR} \\
 \hline
 \end{array}$$

How many solutions can you find to this cryptarithm?

How can you be sure you have found them all?

$T=9$   
 $W=2, \text{ or } 3$   
 ~~$W=4$~~   
 $O=8$   
 $F=1$

$U=5$   
 $R=6$

Since  $0+0=0$   
 None are 0.  
 since  $1000/2=5$   
 $TWO > 500$   
 $2T = FO$ . 0 is even  
 test N° ending in  
 2, 4, 6, 8 or 10. 8:  
 $18/2=9$   $T=9$ : test

Can you create other similar cryptarithms?

Here are some suggestions to start you off.

$$\begin{array}{r}
 216 \\
 \text{ONE} + \text{ONE} = \text{TWO}
 \end{array}$$

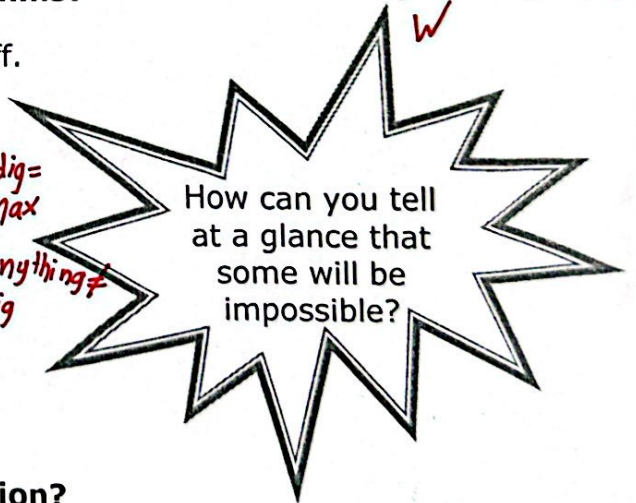
impossible  $\text{ONE} + \text{TWO} = \text{THREE}$

3 dig + 3 dig = 4 dig max

impossible  $\text{ONE} + \text{THREE} = \text{FOUR}$

5 dig + anything ≠ 4 dig

$$\begin{array}{r}
 4030 \quad 152 \quad 8 \\
 \text{FOUR} + \text{FIVE} = \text{NINE} \\
 (\text{or } q)
 \end{array}$$



Can you make a cryptarithm subtraction?

$$\begin{array}{r}
 \text{NINE} \\
 - \text{FIVE} \\
 \hline
 \text{FOUR}
 \end{array}$$