

Puzzle of the Week

Letter Substitutions – 4

Rules:

1. A letter represents a digit from 0 to 9, and has the same value throughout a single puzzle.
2. No number can start with the digit 0.
3. Within a puzzle, different letters must have different values.

$$\begin{array}{r}
 8 \\
 + A \\
 \hline
 B \ 2
 \end{array}
 \Rightarrow
 \begin{array}{r}
 8 \\
 + 4 \\
 \hline
 1 \ 2
 \end{array}$$

THE CHALLENGE: Find the value of A, B, C, D, and E in these puzzles.

$$\begin{array}{r}
 A \\
 + B \ B \\
 \hline
 C \ 7
 \end{array}
 \qquad
 \begin{array}{r}
 D \\
 + E \ D \\
 \hline
 D \ E
 \end{array}$$

EXPLORATION: Make some letter substitution puzzles for your friends to solve.

Puzzle of the Week

Letter Substitutions – 4 – Notes

THE CHALLENGE: $A + BB = C7$: Adding A forces a carry, so C must be one more than B. $A + B$ is 17, and the two numbers are one apart, so this must be $9 + 8 = 17$.

The answer is $9 + 88 = 97$.

$D + ED = DE$: Notice that $D + D$ ends in E and has a carry. That is, $D + D = 1E$. Also, because of the carry to the tens place, D must be one more than E. List out the possibilities for $D + D = 1E$:

$$5 + 5 = 10, 6 + 6 = 12, 7 + 7 = 14, 8 + 8 = 16, 9 + 9 = 18.$$

The only one of these possibilities that fits the requirements is when $D = 9$ and $E = 8$.

The answer is: $9 + 89 = 98$.