

Puzzle of the Week

Letter Substitutions – 6

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, E, F, G, K, L, and M in these puzzles.

$$\begin{array}{r}
 B \ A \\
 + B \ B \\
 \hline
 C \ A \ B
 \end{array}$$

$$\begin{array}{r}
 E \ D \\
 + F \ D \\
 \hline
 F \ G \ G
 \end{array}$$

$$\begin{array}{r}
 K \ K \\
 + L \ K \\
 \hline
 L \ L \ M
 \end{array}$$

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

Puzzle of the Week

Letter Substitutions – 6 – Notes

THE CHALLENGE: $BA + BB = CAB$: The carry can be at most 1, so $C = 1$. $A + B = B$ forces $A = 0$. $B + B = 10$ finishes it off with $B = 5$.

The solution is: $50 + 55 = 105$.

ED + FD = FGG: The carry must be 1, so $F = 1$. With $F = 1$, $E + 1 + (\text{possible carry}) = 1G$ forces $G = 0$, and $E = 8$ or 9 . $D + D = 0$ or 10 leaves us with $D = 5$, a carry into the next column, and then $E = 8$.

The solution is: $85 + 15 = 100$.

KK + LK = LLM: Once again, the carry must be 1, so $L = 1$. $K + 1 + (\text{possible carry}) = 11$ forces $K = 9$ and the possible carry is a definite carry. Then $K + K = 1M$ becomes $9 + 9 = 1M$, so $M = 8$.

The solution is: $99 + 19 = 118$.