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.

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

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.