Puzzle of the Week
Letter Substitutions – 5

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 B, E, S, T, O, G, and U in these puzzles.

$$\begin{array}{r} B\ E \\ +\ B\ E \\ \hline S\ E\ E \end{array} \qquad \begin{array}{r} T\ O \\ +\ G\ O \\ \hline O\ U\ T \end{array}$$

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

Puzzle of the Week

Letter Substitutions – 5 – Notes

THE CHALLENGE: **BE + BE = SEE:** For E + E to end in E, it must be that E = 0. The largest the carry can be from the tens place to the hundreds place is 1, so S = 1. Finally, B + B = 10 forces B = 5.

So, the answer is 50 + 50 = 100.

TO + GO = OUT: The largest the carry can be into the hundreds place is 1, so O = 1. O + O ends in T forces T = 2.

We now have 21 + G1 = 1U2. This means 2 + G = 1U. For 2 + G to be at least 10, G must be 8 or 9. If G = 9, then 2 + G = 11 and that would mean U = 1 and O = 1, which is not allowed. So, G = 8 and U = 0.

So, the answer is 21 + 81 = 102.