Puzzle of the Week
Letter Substitutions – 11

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.

```
  8          8
+ A   =>   + 4
-----      -----
B 2        1 2
```

THE CHALLENGE: Find the value of A, B, C, D, and E to make this puzzle work.

```
    A  B  C  D  E
x                 A
-------------------
E  E  E  E  E  E
```

EXPLORATION: Make some letter substitution puzzles for others to solve.

Puzzle of the Week
Letter Substitutions – 11 – Notes

THE CHALLENGE: The key to solving this is to focus on A x E = E, 1E, 2E, or whatever is needed before the E. There are very few combinations of single digits that have this property. Note that A cannot be 0 or 1, and E cannot be 0. Here is the list of the possibilities, listing as A, E:

3, 5: 3 x 5 = 15

5, 1: 5 x 1 = 5

5, 3: 5 x 3 = 15

5, 7: 5 x 7 = 35

5, 9: 5 x 9 = 45

7, 5: 7 x 5 = 35

9, 5: 9 x 5 = 45

Once you have this list, it is quick work to see that A = 7 and E = 5 is the only one that works. This gives the solution A = 7, B = 9, C = 3, D = 6, and E = 5. The finished puzzle looks like this:

```
   7 9 3 6 5
x          7
-----------
5 5 5 5 5 5
```