Puzzle of the Week
Letter Substitutions – 7

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

```
  A A          D D          K K
+ C B        + D E        + K K
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B B C        F D F        L L M
```

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

Puzzle of the Week
Letter Substitutions – 7 – Notes

THE CHALLENGE: **AA + CB = BBC:** The carry must be 1, so B = 1. A + B = C becomes A + 1 = C, so C is one more than A. A + C = 11 together with C = A + 1 forces A = 5 and C = 6.

The solution is: 55 + 61 = 116.

DD + DE = FDF: The carry must be 1, so F = 1. Looking through the possibilites, D + D + (possible carry) = 1D has only one way of working out - we must have D = 9 and the possible carry is a definite carry. Finally, D + E = 1F becomes 9 + E = 11 forces E = 2.

The solution is 99 + 92 = 191.

KK + KK = LLM: Again, the carry must be 1, so L = 1. For K + K + (possible carry) = 11, we must have K = 5 and the possible carry is a definite carry. 5 + 5 = 1M forces M = 0.

The solution is: 55 + 55 = 110.