

IT'S OLNEY MATH

– Greg Coxson

My sister lives in Australia, where the commuter trains have four-digit ID numbers posted inside the train cars. On her two-hour commutes to Sydney with her kids, they like to take the four digits and try and find a way to operate on them using any of the following operations: $\{+, -, \times, /, \wedge\}$ (where \wedge means raising a number to a power) and arrive at the number 10. Each digit can be used once and only once, but they can be re-ordered (or “permuted”, as mathematicians say) any way you need.

You might find that our own Metro cars here in the DC area have four-digit ID numbers too. So you do not have to travel to Australia to play this game. All you need is to take a Metro ride to Washington.

See if you can find a way to get 10 from the following train ID numbers:

1. 2226
2. 1289
3. 9999
4. 2789

Note that it is not allowed to combine two or more digits into one multi-digit number (for example, combining 1 and 8 to give the two-digit 18).

Finding a correct solution for each of these, and reporting them to the Olney Farmers Market organizers before anyone else does, will earn you a valuable prize.

Now, if this turns out to be too easy, a harder problem is to prove that there is no solution for a given number, say the important American year 1776.

Thanks for being a friend of the Olney Farmers Market!