

1, 2, 3

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123 = divisible by 3

12 = divisible by 2

1 = divisible by 1

1, 2, 3, 4

You can't make a four digit number involving all the times tables 4 to 1. The first 4 digits have to be in the 4x table, the first 3 digits have to be in the 3x table and so on.

Proof:

3412 = 4x ✓

341 = 3x

= Not possible. This proves that 1432 can't work because the first 3 digits are the same but mixed up.  $4+3+1 = 8$  8 = Not in the 3x table.

The main reason why this is impossible is because there's a certain format the numbers have to be in for a possibility to work. (ODD - EVEN) Since multiples of 4 are always even numbers, there's only 2 even numbers, and for it to 'work' the second digit has to be even. (It has to be in the 2x table for it to work.) The last digit also has to be even to be in the 4x table. But the 3x table is the problem. Why?

Why, because the only possible '4x table endings' have to use the available digits. This comes to a conclusion that the only ending numbers you can have are 12, 24 and 32. (3412, 4312, 3124, 1324, 1432, 4132)

Unfortunately, all the first 3 digits on each of the numbers don't add up to a multiple of 3. (on ANY of them.)

1, 2, 3, 4, 5

This is impossible, because again there's only 2 even digits. It also doesn't work because the only ones you can do are 5, 15, 25, 35, 45 and they all don't work. Also to be in the 4x table the 4th digit has to be even, so the number CAN'T end in 15 or 35. The only possible options would be ending in 45 or 25. (Of course 5). The main problem is the ~~It mainly is the 4x table as the problem~~ since of the 'odd even' format.