In animals, laughter only occurs during direct physical contact, such as tickling or play (wrestling, rolling, nibbling, etc.). Human laughter, however, is unique in several ways. Humans have a sense of humor and laugh not only during play; they find images, situations, and words amusing. Additionally, only in humans is laughter contagious.

Everyone has likely experienced the dreadful feeling of being overcome with uncontrollable laughter at the most inopportune moment, such as during a solemn ceremony, and being utterly unable to suppress a completely senseless giggle. This affects everyone, even professionals like radio and television announcers. It serves as a way to relieve tension, originates from the oldest regions of our brain, and is very difficult to control. One person's laughter can easily spread within a group, as the brain loves laughter. Studies show that when we hear laughter, we enter a state of readiness—and we start laughing, often without even knowing why.

Although we believe we laugh when something is funny, research indicates that we laugh 30 times more often in company. Laughter is an evolutionarily ingrained, powerful tool for shaping social relationships. Through laughter in conversations, we express sympathy, understanding, and a sense of belonging. We invite listeners to engage, signaling good intentions. Shared laughter helps navigate difficult situations, relieve tension, and strengthen bonds.

Recently, the world has not been particularly conducive to laughter. In times of frustration and uncertainty, one day a year is not enough. Starting today, let's take laughter seriously.

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Kąt Otwarty 2°: $14 = 2 \cdot 7$

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A few years ago, recreational mathematics found its way under snowy rooftops thanks to a curious property of the number 2020. Specifically, the first digit of this number indicates the count of the digit 0 in its decimal representation, the second digit represents the count of the digit 1, while the third and fourth digits correspond to the counts of digits 2 and 3, respectively. Numbers possessing this self-descriptive property are called *autobiographical*. Naturally, the total number of autobiographical numbers is finite, as they can have at most ten digits. There exist precisely seven such numbers, the largest of which is 6 210 001 000.

More about autobiographical numbers can be found in the article by Piotr Zarzycki and Ryszard Kubiak, *On Autobiographical Numbers*, Δ^{12}_{20}.

Let us examine numbers that also, in a certain sense, describe themselves, but their method of self-description is somewhat subtler. First, let us recall the first nine prime numbers:

$$p_1 = 2,\ p_2 = 3,\ p_3 = 5,\ p_4 = 7,\ p_5 = 11,\ p_6 = 13,\ p_7 = 17,\ p_8 = 19 \text{ oraz } p_9 = 23.$$

The factorization of the number 14 is $14 = 2 \cdot 7$. Notice that 2 is the first prime number, while 7 is the fourth. Thus, we have:

$$14 = 2 \cdot 7 = p_1 \cdot p_4.$$

Among numbers that do not contain the digit 0, there are three more known cases where each digit in the decimal representation corresponds to a single factor in their prime factorization:

$$154 = 2 \cdot 11 \cdot 7 = p_1 \cdot p_5 \cdot p_4,$$
$$1196 = 2 \cdot 2 \cdot 23 \cdot 13 = p_1 \cdot p_1 \cdot p_9 \cdot p_6,$$
$$279\,174 = 3 \cdot 17 \cdot 23 \cdot 2 \cdot 17 \cdot 7 = p_2 \cdot p_7 \cdot p_9 \cdot p_1 \cdot p_7 \cdot p_4.$$

Unlike classic autobiographical numbers, here there is no natural upper bound on the size of the sought numbers—multiplying n prime numbers together can yield an n-digit number. So, do more such numbers exist? Are there infinitely many, or at least one more? Currently, **we do not know**—and that is unfortunate, because I would love to find out.

The problem under consideration can be extended to numbers containing the digit 0 in their decimal representation—for example, by assuming $p_0 = 1$, which results in ignoring every occurrence of this digit. Alternatively, one could explore this property in different numeral systems. The final question regarding the total count of numbers possessing this property remains open in these variations as well.

I personally verified that a fifth such number does not exist among numbers with up to 23 digits. However, I am not the record holder in this regard, as indicated by information in the *OEIS* encyclopedia—the sequence is listed under A097227. As it turns out, a much larger range was checked by Chai Wah Wu, an American researcher from IBM.