

The OEIS meta sequence and subway stations

[#shortform](#) [#depths of OEIS](#) [#oeis](#)

2026-04-09

[A051070](#) is a sequence about OEIS sequences. $a(n)$ is the n -th term in sequence A_n (or -1 if A_n doesn't have enough terms).

So the first term in A051070 is 1 because A000001 is the number of groups of order n , and that sequence has 1 as its entry in index 1. A000002 is the Kolakoski sequence (what? For another time) and has value 2 in entry 2. The sequence continues: 1, 2, 1, 0, 2, 3, 0, 7, 8, 4, 63, 1, 316, ...

At first you might think, “what in the Gödel?” What if the arbitrary indexing of the OEIS changes over time? Aren't these sequences supposed to be defined by mathematical rules?

Not the fun ones, apparently. In the comments, Pontus von Brömssen noted that $a(58)$ has 58669977298272603 digits, so it's too large to include in the database entry for A051070. $a(66)$ is the first unknown value, because A000066 (Smallest number of vertices in trivalent graph with girth (shortest cycle) = n) is only known up to 12 vertices. And then we get to my two favorite quirks about this sequence.

The first is that the first time $a(n) = -1$ occurs, it's for $n = 53$ and 54 , quoting the OEIS, “in both cases because the relevant New York subway lines do not have enough stops.” What? Why are New York Subway lines involved? Turns out, the OEIS has roughly a dozen sequences of numbered stops on train lines. A000053 is “Local stops on New York City 1 Train (Broadway-7 Avenue Local) subway.” A001049 is “Numbered stops in Manhattan on the Lexington Avenue subway.” Of course, this chips away even further at the idea that OEIS sequences need to have a mathematical definition removed from worldly messiness. Digging around, I could only find a short note in [this Numberphile video](#) where Neil Sloane (who created OEIS and added these entries) mentioned that they're commonly used on math quizzes and tests. If you know someone who has used train lines on their quizzes, and didn't already know about these OEIS entries, please let me know. I need this to be a common organic experience.

The second quirk is that A051070 leaves open the question of what the value of $a(51070)$ is. It gets worse with [A102288](#), which is defined as $1 +$ the n -th term in sequence A_n . (There are some slight differences about offsets here, but I'm using A102288 because it has juicier comments) Even if there was a default value for the 102288-th entry in this sequence, it would contradict its own definition.

There is an argument in the comments section, which starts with an unattributed “What is $a(102288)$?!” M. F. Hasler complained in 2017: “The term $a(102288)$ has no possible value according to the present definition, so the definition of this term should be changed.” Neil Sloane replied the same day: “I disagree with the previous comment! I prefer the present, deliberately paradoxical, definition.” In the age-old battle between whimsy and well-definedness, whimsy wins again.

Want to respond? [Send me an email](#), [post a webmention](#), or find me [elsewhere on the internet](#).

This article is syndicated on:

- [Mastodon](#)
 - [Bluesky](#)
-