

PUZZLEHEAD

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By Siobhan Roberts

May 21, 2023

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Some numbers are odd:

1, 3, 5, 7, 9, 11, 13, 15 ...

Some are even:

2, 4, 6, 8, 10, 12, 14, 16 ...

And then there are the puzzling “eban” numbers:

2, 4, 6, 30, 32, 34, 36, 40 ...

What number comes next? And why?

These are questions that Neil Sloane, a mathematician of Highland Park, N.J., loves to ask. Dr. Sloane is the founder of the On-Line Encyclopedia of Integer Sequences, a database of 362,765 (and counting) number sequences defined by a precise rule or property. Such as the prime numbers:

2, 3, 5, 7, 11, 13, 17, 19 ...

Or the Fibonacci numbers — every term (starting with the 3rd term) is the sum of the two preceding numbers:

0, 1, 1, 2, 3, 5, 8, 13 ...

This year the OEIS, which has been praised as “the master index to mathematics” and “a mathematical equivalent to the FBI’s voluminous fingerprint files,” celebrates its 50th anniversary. The original collection, “A Handbook of Integer Sequences,” appeared in 1973 and contained 2,372 entries. In 1995, it became an “encyclopedia,” with 5,487 sequences and an additional author, Simon Plouffe, a mathematician in Quebec. A year later, the collection had doubled in size again, so Dr. Sloane put it on the internet.

“In a sense, every sequence is a puzzle,” Dr. Sloane said in a recent interview. He added that the puzzle