

[Home](#) [Table of Contents](#) [Feedback](#) [Subscribe](#) [Help/About](#) [Archives](#) [Search](#)

SCIENCE NEWS Online

THE WEEKLY NEWSMAGAZINE OF SCIENCE

Search



- [Print Article](#)
- [E-mail Article](#)

Week of May 17, 2003; Vol. 163, No. 20

[Archives](#)

[New Science News
pdf Archive,
1995-2000](#)

[Subscriber Login](#)
Access to full contents

[Sign In](#) [Help](#)

Login problems?
[Click here.](#)

Online Features

- **Math Trek**
[Sequence Puzzles](#)
- **Food for Thought**
School Lunches are
Struggling to Earn
High Marks
- **Science Safari**
Mars Photo of the
Day
- **TimeLine**
70 Years Ago in
Science News



Subscribe to *Science News*.
Click OR call
1-800-552-4412.

[audible.com®](#)

Subscribe to *Science News*
in an audio format.



Science News Books.

**NEW! Free
E-mail Alerts**

Science News e-LETTER.



Shop at the Science Mall.



Science News
Logo Wear



Copyright Clearance Center



Browse a *Science News*
photo collection.

Sequence Puzzles

Ivars Peterson

Given a sequence consisting of the whole numbers 1, 4, 9, 16, 25, 36, and 49, what number comes next in the sequence?

The most likely answer is 64—the next number in a sequence of squares of consecutive integers, starting with 1.

Such sequence puzzles are a staple of textbook exercises, brainteaser collections, and various intelligence and aptitude tests. Some sequences are easy to figure out, some have multiple interpretations, and others can require considerable head-scratching before the pattern becomes evident.

Neil A.J. Sloane of AT&T Shannon Labs in Florham Park, N.J., has been collecting number sequences ever since he was a graduate student at Cornell University in the 1960s. He described nearly 6,000 examples in his 1995 book *The Encyclopedia of Integer Sequences* and has added many thousands of additional examples to an online edition of the book (see <http://www.research.att.com/~njas/sequences/>).

One useful feature of Sloane's online compendium is the ability to enter a set of numbers and search for information about that sequence. For example, suppose you enter the numbers 1, 2, 3, 6, 11, 23, 47, 106, 235. Among other things, the results page tells you that the next term is 551, that this sequence is associated with trees having n nodes, and that there is a formula for calculating the sequence's terms.

As a way to demonstrate his online encyclopedia, Sloane recently assembled an entertaining page of sequence puzzles, available at <http://www.research.att.com/~njas/doc/OEIS1.pdf>. It starts off with several simple classic sequences (perfect squares, Fibonacci numbers, and so on), then quickly moves into more perplexing territory.

For example, what do you make of the sequence 1, 2, 3, 7, 43, 1807, 3263443? It turns out that the terms are sometimes called Euclid numbers and the sequence's next member is 10650056950807.

Sloane has additional puzzles at <http://www.research.att.com/~njas/sequences/Spuzzle.html>. When you give up, you can just click on a link to see the answer. That's a handy shortcut you don't have available to you when you're taking your SATs.



References and sources for this article

References:

Peterson, I. 2002. The EKG sequence. *Science News Online* (April 6). Available at <http://www.sciencenews.org/20020406/mathtrek.asp>.

_____. 1996. Next in line. *Science News Online* (Nov. 16). Available at http://www.sciencenews.org/sn_arch/11_16_96/mathland.htm.

Sloane, N.J.A., and S. Plouffe. 1995. *The Encyclopedia of Integer Sequences*. San Diego, Calif.: Academic Press.

Neil Sloane's *On-Line Encyclopedia of Integer Sequences* is available at <http://www.research.att.com/~njas/sequences/>.

A collection of Ivars Peterson's early *MathTrek* articles, updated and illustrated, is now available as the Mathematical Association of America (MAA) book *Mathematical Treks: From Surreal*

Numbers to Magic Circles. See
<http://www.maa.org/pubs/books/mtr.html>.

Comments are welcome. Please send messages to Ivars Peterson at ip@sciserv.org.

Ivars Peterson is the mathematics/computer writer and online editor at *Science News* (<http://www.sciencenews.org>). He is the author of *The Mathematical Tourist*, *Islands of Truth*, *Newton's Clock*, *Fatal Defect*, and *The Jungles of Randomness*. He also writes for the children's magazine *Muse* (<http://www.musemag.com>) and is working on a book about math and art.



NEW! NEW! NEW! *Math Trek 2: A Mathematical Space Odyssey* by Ivars Peterson and Nancy Henderson. For children ages 10 and up. New York: Wiley, 2001. ISBN 0-471-31571-0. \$12.95 USA (paper).

 Recently on MathTrek

[Coins for Making Change Efficiently \(May 10, 2003\)](#)

[A Geometric Superformula \(May 3, 2003\)](#)

[Recycling Topology \(April 26, 2003\)](#)



[Home](#) | [Table of Contents](#) | [Feedback](#) | [Subscribe](#) | [Help/About](#) | [Archives](#) | [Search](#)

Copyright ©2003 Science Service. All rights reserved.
1719 N St., NW, Washington, DC 20036 | 202-785-2255 | scinews@sciserv.org