

# **Number Sequences and Inductive Reasoning**

## **Sequence of Odd Numbers**

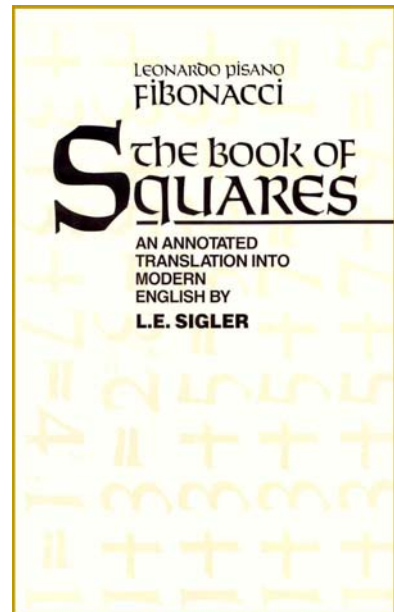
**1, 3, 5, 7, . . .**

## **Sequence of Squares**

**1, 4, 9, 16, . . .**

## Introduction

I thought about the origin of all square numbers and discovered that they arise out of the increasing sequence of odd numbers; for the unity is a square and from it is made the first square, namely 1; to this unity is added 3, making the second square, namely 4, with root 2; if to the sum is added the third odd number, namely 5, the third square is created, namely 9, with root 3; and thus sums of consecutive odd numbers and a sequence of squares always arise together in order.



**Odds: 1, 3, 5, 7, ...**

**Squares: 1, 4, 9, 16, ...**

$$1 = 1 = 1^2$$

$$1 + 3 = 4 = 2^2$$

$$1 + 3 + 5 = 9 = 3^2$$

$$1 + 3 + 5 + 7 = 16 = 4^2$$

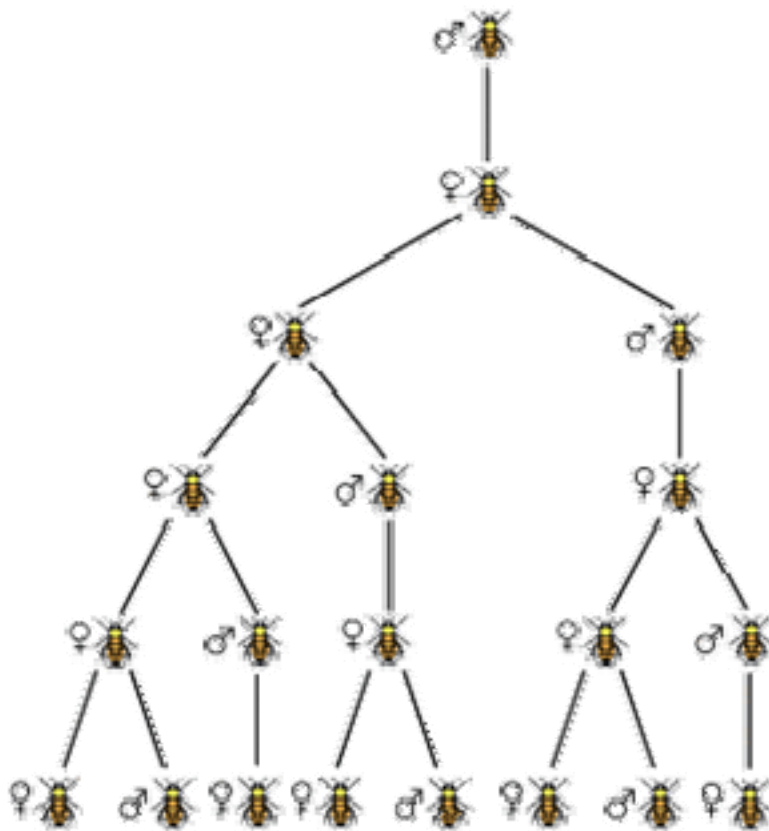
$$1 + 3 + 5 + 7 + 9 = 25 = 5^2$$

# Fibonacci Sequence



1, 1, 2, 3, 5, 8, ...

**Application:** Count the number of bees in each generation of the family tree of a male honey bee. (A male honey bee has only one parent, a mother. A female honey bee has two parents, a mother and a father.)



# Mathematics Around Us

## USA TODAY Snapshots

### The nation's best sellers

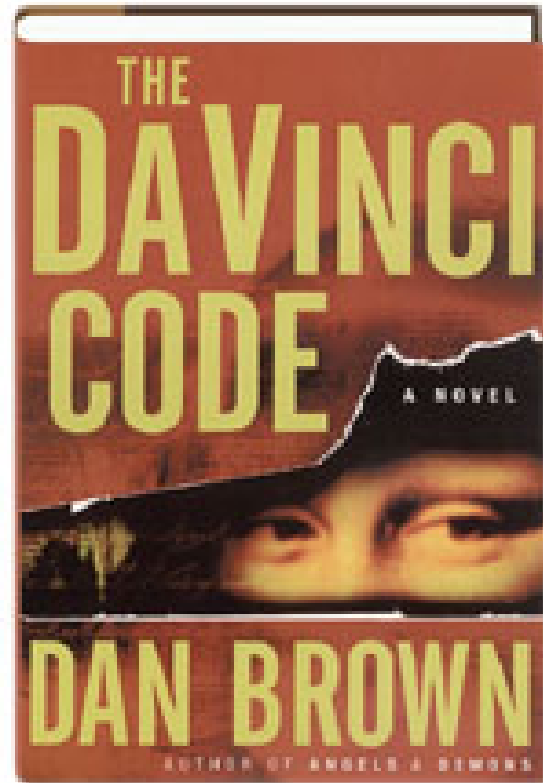
The USA TODAY top five best sellers are shown by proportion of sales. Example: For every 10 copies of *The Da Vinci Code* sold, *The South Beach Diet* sold 9.9 copies:



Tomorrow: Top 50 books list  
([top150.usatoday.com](http://top150.usatoday.com))

Source: USA TODAY Best-Selling Books

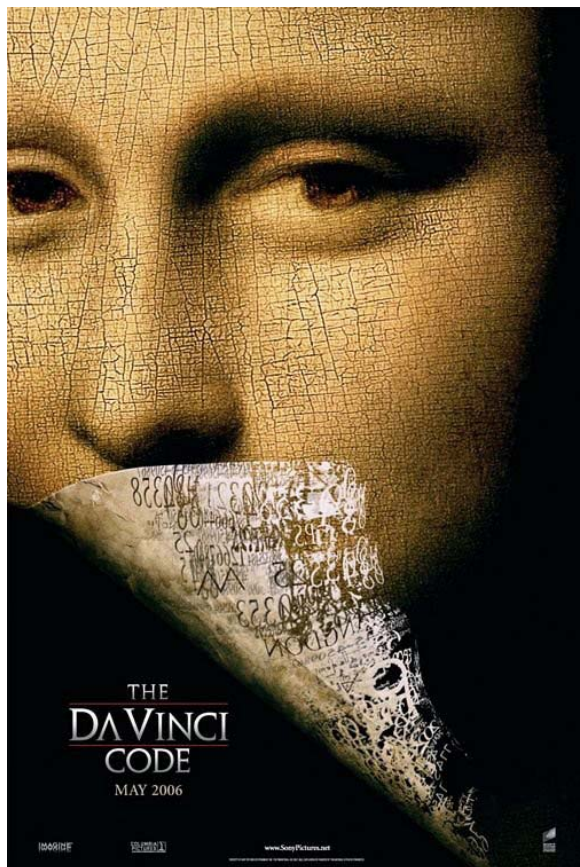
USA TODAY



13-3-2-21-1-1-8-5

O Draconian devil!

Oh, lame saint!





Atlas

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Rhyming Dictionary

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Unabridged

## Fibonacci number

One entry found for **Fibonacci number**.

Main Entry: **Fi·bo·nac·ci number** 

Pronunciation: "fɛ-b&- 'nă-chɛ-, "fi-b&-

Function: *noun*

Etymology: Leonardo *Fibonacci* died *ab* 1250

Italian mathematician

: an integer in the infinite sequence 1, 1, 2, 3, 5, 8, 13, ... of which the first two terms are 1 and 1 and each succeeding term is the sum of the two immediately preceding

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