

Stanford Continuing Studies, Course MATH 07, Fall 2005

# Three views of mathematics

## LECTURE 8

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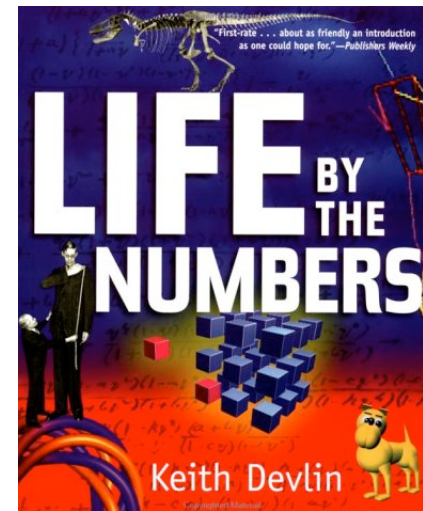
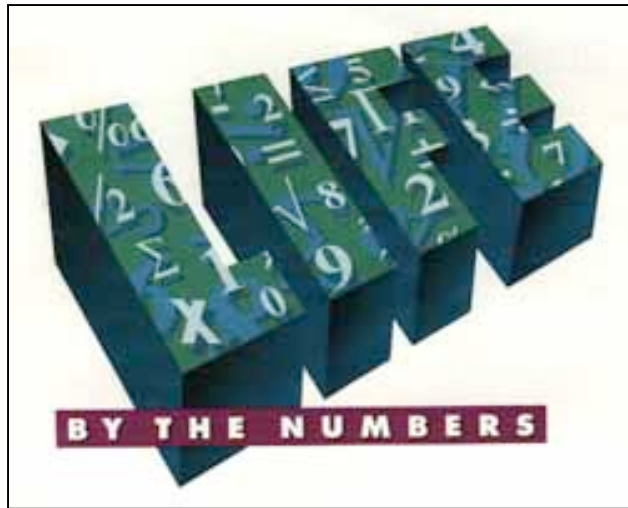
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# Math in the real world

1. Visualization
2. GPS
3. The natural world
4. Telecommunications
5. Data mining
6. Consumer research
7. Medicine
  1. Drug evaluation
  2. Virus structure
8. Law
9. Cryptography
10. Financial mathematics

## *Video clips:*



# *Life by the Numbers*

**PBS: WQED-tv (Pittsburgh), 1998**

**Videos available from [www.montereymedia.com/science](http://www.montereymedia.com/science)**

**Companion book published by John Wiley.**

# The mathematical method

***Mathematics is the science of patterns.***

- Identify a particular pattern in the world.
  - Study it.
  - Develop a notation to describe it.
  - Use that notation to further the study.
- Formulate basic assumptions (axioms) to capture the fundamental properties of the abstracted pattern.
  - Study the abstracted pattern, establishing truth by means of rigorous proofs from the axioms.
  - Develop procedures that you and others may use to apply the results of the study to the world.
- Apply the results to the world.