FORMALIZING 100 THEOREMS

Paul and Jack Abad, "The Hundred Greatest Theorems"
(http://pirate.shu.edu/~kahlnath/Top100.html)
Selection based on 3 criteria:

- ▶ "the place the theorem holds in the literature"
- ▶ "the quality of the proof"
- ▶ "the unexpectedness of the result"

Freek Wiedijk, "Formalizing 100 Theorems"
(https://www.cs.ru.nl/~freek/100/)

- ▶ Isabelle (89)
- ▶ HOL Light (87)

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- ▶ ACL2/Nqthm (44)

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ACL2/Nqthm Contributors

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THEOREMS PROVED (44)

- ▶ Number theory (20) (see `projects/numbers/README`)
- ▶ Combinatorics (8)   "
- ▶ Group theory (3)   (see `projects/groups/README`)
- ▶ Logic (1)
- ▶ Analysis (12)

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See also Eric Smith's XDOC page, including this disclaimer:
"Note that ACL2 has largely focused on proving theorems that are rather different from these (e.g., the correctness of large and complex hardware designs)."
Why don't we just prove the theorems?

THEOREMS UNPROVED (56)

Elementary theorems (7)

- ▶ 13 Polyhedron Formula
- ▶ 74 Principle of Mathematical Induction
- ▶ 77 Sum of kth Powers
- ▶ 82 Dissection of Cubes
- ▶ 83 Friendship Theorem
- ▶ 89 Factor and Remainder Theorems
- ▶ 98 Bertrand's Postulate

Hard theorems (2)

- ▶ 32 Four Color Theorem
- ▶ 33 Fermat's Last Theorem

THEOREMS UNPROVED (56)

Algebra (6)
- ▶ 16 Unsolvability of Higher Degree Equations
- ▶ 37 Solution of Cubic Equation
- ▶ 39 Pell's Equation
- ▶ 46 Solution of Quartic Equation
- ▶ 49 Cayley-Hamilton Theorem
- ▶ 97 Cramer's Rule

Analysis (24)

Geometry (14)

Set Theory (3)

ONGOING "ANALYSIS" PROJECTS

- ▶ 8 The Impossibility of Trisecting the Angle and Doubling the Cube (Gamboa, Gamboa, & Cowles)
- ▶ 37 Solution of Cubic Equation (Gamboa)
- ▶ 46 Solution of Quartic Equation (Gamboa)
- ▶ 51 Pi Is Transcendental (Cowles & Gamboa)
- ▶ 67 e Is Transcendental (Cowles & Gamboa)
- ▶ 98 Bertrand's Postulate (Cowles & Gamboa)