Outline: Applications of Finite Mathematics

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Here is a list of stories I want to tell.

1. Counting and Probability
   (a) *Cash WinFall* aka *Jerry and Marge Go Large* aka The MIT Lottery Kids.
   (b) You don't know how to fake a cointoss.
   (c) The Birthday Problem.
   (d) Cointossing is a microcosm for everything.
   (e) Galton Board demonstration.
   (f) How the Allies Calculated the Number of German Tanks in World War 2 (how Statisticians beat spies).
   (g) You really don't know how probability works and you will be mad about it: *Let's Make a Deal* and The Monty Hall Problem.
   (h) Utility Functions: why if you never miss a plane you are probably doing it wrong.
2. Statistics
   (a) p-value hacking. Its bad and its everywhere.
   (b) Biased Sampling: Berkson's Fallacy, Survivor Bias and the Baltimore Stock Broker.
   (c) Statistical-Logic and Logic-Logic are not the same.
   (d) Everyone wants to make everything a line, but everything isn't a line (regression and the Laffer curve).
3. Graphs and Networks
   (a) The Seven Bridges of Koenigsburg Puzzle [and the House Walking Puzzle].
   (b) The Traveling Salesman Problem
   (c) The Three Houses and Three Utilities Puzzle.
4. Voting
   (a) Slime Molds and Burlington's 2009 Mayoral Election.
5. Symmetry and the Golden Ratio
   (a) The Prisoner Puzzle: `https://www.youtube.com/watch?v=hYSaEyPK5MQ`
   (b) The Hummer Shuffle: `https://web.northeastern.edu/seigen/11Magic/Hummer/Hummer.html`
   (c) The Golden Ratio