MA162: Finite mathematics

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Schedule:

- HW 7A, 7B due Fri, April 20, 2012
- HW 7C due Fri, April 27, 2012
- Final exam, Wed May 2, 2012 from 8:30pm to 10:30pm

Today we will cover 7.1: Sample spaces

Final Exam

- Chapter 7: Probability
  - Counting based probability
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  - Empirical probability
  - Conditional probability
- Cumulative
  - Ch 2: Setting up and reading the answer from a linear system
  - Ch 3: Graphically solving a 2 variable LPP
  - Ch 4: Setting up a multi-var LPP
  - Ch 4: Reading and interpreting answer form a multi-var LPP

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- If you flip a coin once, it will be heads or tails, but who knows which?
- If you flip a coin 1000 times, it will be heads between 450 and 550 times (with a 99.9% probability).

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- An **experiment** is a planned observation of life whose goal is (usually) to confirm a reproducible result
- For example, we might plan an experiment where we flip 10 coins and count how many heads show up.

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- A **sample space** is a list of all the possible outcomes of an experiment
- If we pull one card from the deck, then our sample space can be the set of all 52 (or 54) cards in the deck.
- If we draw five cards from the deck and don't care about order, then there are $\frac{52}{5}\frac{51}{4}\frac{50}{3}\frac{49}{2}\frac{48}{1} = 2,598,960$ possible outcomes

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- Mhtt $= \{HHH, HHT, HTH, THH\}$ has four sample points in it

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- Not all events are mutually exclusive.
- For instance the event "get a head on the very first try!" is $\{HHH, HHT, HTH, HTT\}$ and so the intersection with "more heads than tails" is $\{HHH, HHT, HTH\}$

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5. (STA291) After actually running the experiment, decide whether your probability calculation reflects reality
6. (STAxxx) Decide how many times to run the experiment before you can decide whether your probability calculation reflected reality

Summary

- We learned the words **experiment**, **sample space**, **event**, and **mutually exclusive**
- HW 7A is two questions. Easy questions. DO IT NOW.
- HW 7B and 7C are pretty similar to HW 6ABC
  You have better stuff to do during dead week than say
  "Gee I could have done this last week, you know,
  before my brain MELTED!"
- Monday we will cover 7.2: Probability