Tutorial 1 Outline

Counting, Permutations, & Combinations

Sept. 14, 15, 16

1 Tutorial Info

Tutorial outlines will be posted at the start of the week, and solutions Friday night.
Please attend any of the 4 tutorials, the course will start easy but don't get complacent.
Tutorials are *optional*, but so are a lot of things that are good for you.
Tutorial correspondence will be done through *ms.mcmaster.ca/∼ jovica*

2 Lozinski's Puzzle

Refer to the visual posted on-line.

2.1 Random Guessing

How many unique ways can the 6 strips be arranged?

2.2 Using Intuition

If we use a bit of logic and recognize that an "=" cannot be at the beginning or end of an equation, and there is only one "=" per line, how many ways can they be arranged?

3 Text Questions (Ross, A First Course in Probability; 9e)

3.1 Binomial Theorem

Examples 4d and 4e (page 8)

3.2 Self-Test Problems and Exercises

You are *strongly encouraged* to attempt as many problems from the self-test section as possible. Let's work through 1.3, 1.4, and 1.6 together (found at the end of Chapter 1). *Nota bene*: **There are guided solutions at the back of the textbook!**

4 *Methods of Sampling (time permitting)

Probability can be deceptively difficult, as your intuition can sometimes be misleading. So let's hone our intuition, and put all of the concepts from chapter 1 together.

If we have n objects and want to sample k of them, how many ways are there to arrange:

4.1 an *ordered* set

With, and Without replacement?

4.2 an *UNordered* set

With, and Without replacement?

Sampling an unordered set *with* replacement is considered "tricky" (section 1.6*), but let's try and use our intuition to derive the formula.

4.2.1 Pizza!

Suppose you have 5 children, and 10 pieces of pizza, how many ways are there to divide up the pizza? (Older siblings can be cruel, so one child could potentially get all 10 slices)