

Mathematical Puzzles, Games and Other
Diversions
Day 5

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Notes

More Counting

- ▶ How many different ways can I form a 3-person group in a class of 10 students?
- ▶ Given a race with 10 people, how many ways are there to assign the gold, silver and bronze medals (no ties)?

When order matters, we're dealing with permutations, when it doesn't, we're using combinations.

- ▶ What is the probability that if draw two cards from a deck of cards, the FIRST one you draw is an ace?
- ▶ What is the probability that if you draw two cards from a deck of cards, the SECOND one you draw is an ace?
- ▶ What is the probability that if you draw two cards from a deck of cards, that at least one of them is an ace?

Notes

A basic example of Game Theory

(Hotelling's Law) There's a 1 km stretch of beach where Alice plans to set up an ice cream shop.



- ▶ Assuming an even distribution of people, where should Alice set up shop?
- ▶ Suppose Bob also wants to set up an ice cream shop. Where should they set up their shops to best suit the beachgoers?
- ▶ What can Alice (or Bob) do to get more customers?

Where else have you seen this kind of situation occur?

Notes
