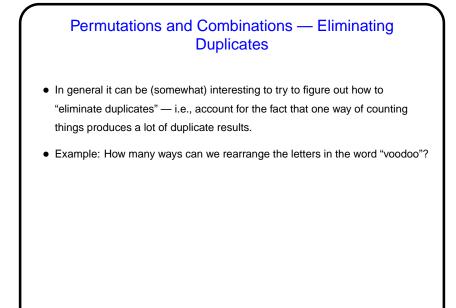
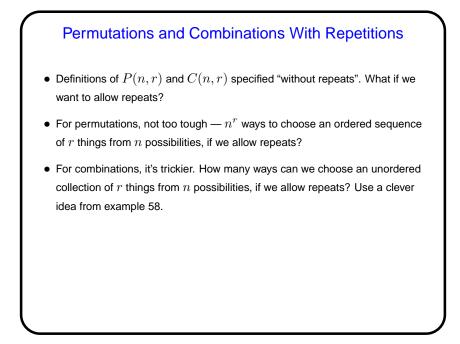
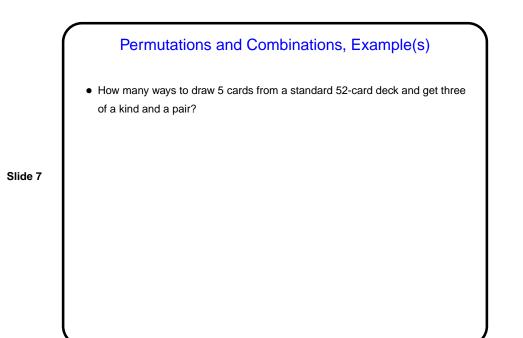


Potential Pitfall — Counting Things Twice
A problem is that some proposed solutions sound reasonable but actually manage to count some things twice, or don't count some things at all.
Example: example 55 part (d).



Slide 5





Probability — Equally-Likely Outcomes

• Basic definition: If S ("sample space") is a set of equally likely outcomes of some action (e.g., possible results of tossing a fair coin), and E ("event") is a subset of S, then we define the probability of E as

$$P(E) = \frac{|E|}{|S|}$$

Slide 8

Examples: Sequences of coin tosses, 5-card "hands" chosen from 52-card deck, etc.

- Note that $0 \leq P(E) \leq 1.$ (Why?) When is P(E) = 0? When is P(E) = 1?
- Note that we can apply anything we know about sizes of sets. (E.g., if E_1 and E_2 are disjoint, what is $P(E_1 \cup E_2)$ in terms of $P(E_1)$ and $P(E_2)$?)

Example(s)

• In a group of *n* people, what's the probability that at least two people have the same birthday?

