

Sampling  
nCr vs nPr

Probability

Sampling w/ or without replacement

prob of 2 aces in 5 card hand 52 cards in deck  
w/out repl.  $1 \rightarrow \frac{4}{52} \cdot \frac{3}{51} \cdot \frac{48}{50} \cdot \frac{47}{49} \cdot \frac{46}{48}$  makes exactly

AA - - - } same for  
 A - A - - }  
 $\frac{4}{52} \cdot \frac{48}{51} \cdot \frac{3}{50} \cdot \frac{47}{49} \cdot \frac{46}{48}$

sets  
 counting sets  $\rightarrow$  permutations; combinations

Complimentary prob.

$A \cup \bar{A} = 1$  complimentary

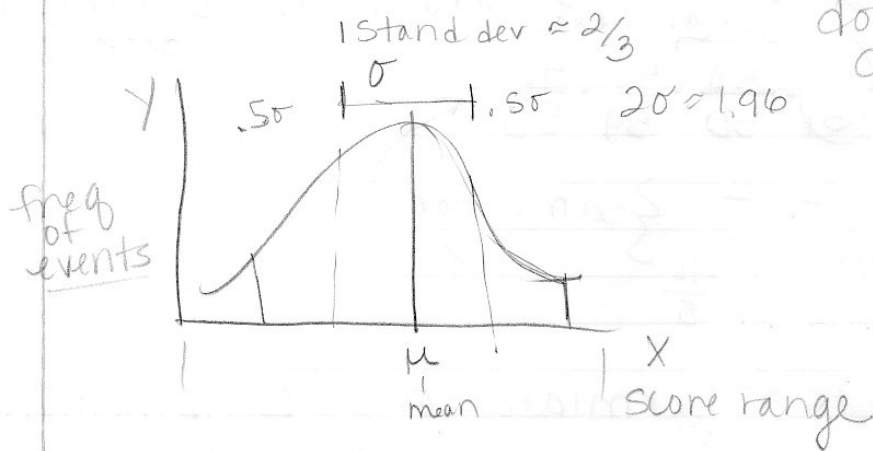
Ace or heart - Ace & Heart  
 $\frac{4}{52} + \frac{13}{52} - \frac{1}{52} = \frac{16}{52}$

no! one ace is heart  
 get rid of dont double count

rolling 2 sided dice. 8 with both even.  
 intersection entities

permutation  
 26  
 35  
 44  
 53  
 62  
 8 and Both even  
 5 ways Both odd  
 Comp of  
 $\frac{52}{36} - 1$  - either even

Joint Prob  
 $P(E \cup F) = P(E) + P(F) - P(E \cap F)$  and double counts



t are samples assuming normal population

$$f(x) = \frac{e^{-\frac{(x-\mu)^2}{2\sigma^2}}}{\sigma\sqrt{2\pi}}$$

missile prob

$$P(A \cap B) = .95$$

$$P(A) = .98 \rightarrow P(A \cap B) = .95$$

$$P(B) = ? \rightarrow P(B|A) = \frac{P(B \cap A)}{P(A)} = \frac{.95}{.98} = .97$$