5 card poker

Find the probability of being dealt 4 aces.

52 cards
4 aces
48 non-aces

$$\frac{{}_4C_4 \cdot {}_{48}C_1}{{}_{52}C_5} = 1.85 \times 10^{-5} = .0000185$$

Find the probability of being dealt 4 of a kind.

$$\frac{{}_{13}C_1 \cdot {}_4C_4 \cdot {}_{48}C_1}{{}_{52}C_5} = 2.40 \times 10^{-4}$$

$$= .00024$$

5) 5 hot peppers
7 do nots

$\Big\}$ 12 hot peppers

a) $p(\text{all hot peppers}) = \dfrac{{}_5C_3}{{}_{12}C_3}$

b) $p(\text{none has peppers}) = \dfrac{{}_7C_3}{{}_{12}C_3}$

c) $p(1 \text{ hot pepper}) = \dfrac{{}_5C_1 \cdot {}_7C_2}{{}_{12}C_3}$

d) $p(\text{at least 2 w/hot})$

$= \dfrac{{}_5C_2 \cdot {}_7C_1}{{}_{12}C_3} + \dfrac{{}_5C_3}{{}_{12}C_3}$

e) $p(\text{at most 2 w/hot})$

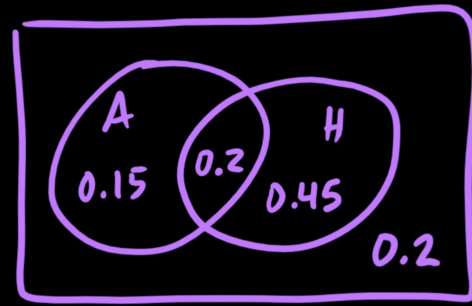
$= 1 - p(\text{all hots})$

$= 1 - \dfrac{{}_5C_3}{{}_{12}C_3}$

6) A = pass Algebra $\quad p(A) = 0.35$

H = pass history $\quad p(H) = 0.65$

$p(A \cup H) = 0.8$



$p(A \cup B) = p(A) + p(B) - p(A \cap B)$

$p(A \cap B) = p(A) + p(B) - p(A \cup B)$

$= 0.35 + 0.65 - 0.8$

$= 0.2$

3A) $p(3 \text{ Aces}, 2 \text{ Kings}) = \dfrac{{}_4C_3 \cdot {}_4C_2}{{}_{52}C_5} = 9.23 \times 10^{-6}$

$p(\text{full house})$

2
3
4
5
6
7
8
9
10
J
Q
K
A

$$\frac{{}_{13}C_2 \cdot {}_2C_1 \cdot {}_4C_3 \cdot {}_4C_2}{{}_{52}C_5} = 0.00144$$