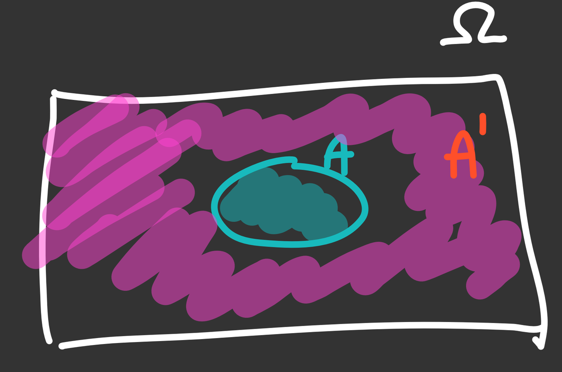


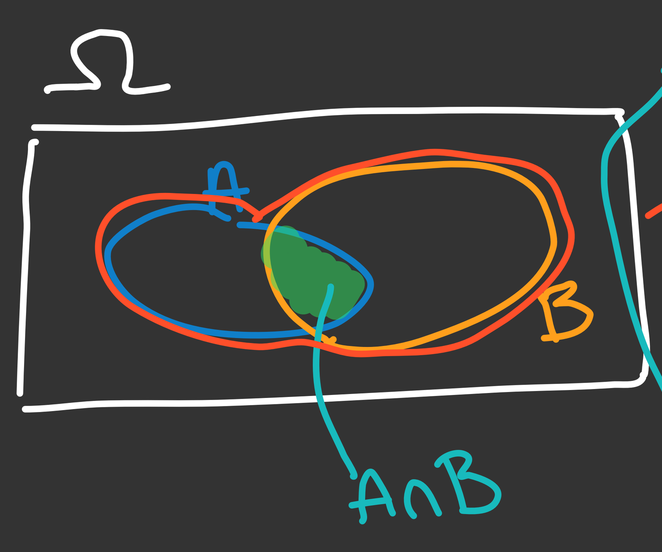
$P(\Omega)=1$

$A \cup A' = \Omega$

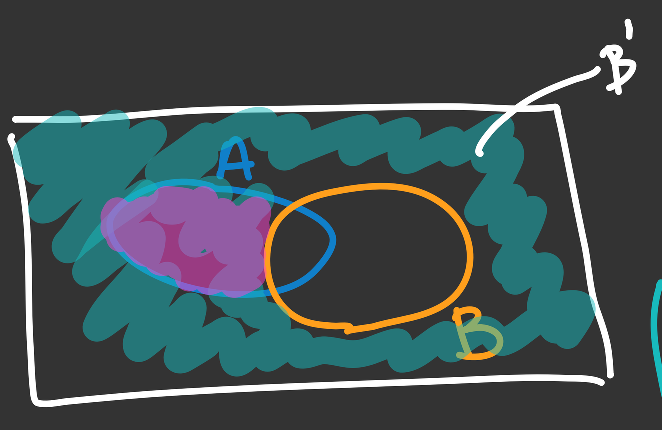
$P(A)+P(A') = P(\Omega)$

$P(A)+P(A') = 1$

$$\boxed{P(A') = 1 - P(A)}$$



$$\boxed{P(A\cup B) = P(A)+P(B) - P(A\cap B)}$$



$A \cap B'$

$A \setminus (A\cap B)$

$$\boxed{P(A\cap B') = P(A) - P(A\cap B)}$$

4) 6P 3W

$\Omega: \ \underset{1}{3} \cdot \underset{2}{3} \cdot \underset{3}{3} \cdot \underset{4}{3} \cdot \underset{5}{3} \cdot \underset{6}{3}$

$|\Omega| = 3^6$

A – wszyscy 1 wagon

$3 \cdot \underline{1}\ \underline{1}\ \underline{1}\ \underline{1}\ \underline{1}\ \underline{1}$

↑ wybierany wagon

$|A| = 3$

$P(A) = \frac{|A|}{|\Omega|} = \frac{3}{3^6} = \frac{1}{3^5} = \frac{1}{243}$

b) B – tylko 2 wagony

$3 = \binom{3}{2} \cdot \underline{2} \cdot \underline{2}\ \ \underline{2} \cdot \underline{2}\ \ \underline{2} \cdot \underline{2}$

↑ wybór 2 z 3 wagonów

$|B| = 3\,(2^6 - 2)$

$P(B) = \frac{|B|}{|\Omega|} = \frac{3 \cdot 62}{3^6} = \frac{62}{243}$

~~(1,1,1,1,1,1)~~
(1,2,1,1,1,1)
(1,1,2,1, … ,1)
⋮
~~(2,2,2,2,2,2)~~ } 64

1. P-stwo warunkowe

A – zd suma oczek > 9

B – zd. przynajmniej na 1 kostce wypadła „6"

$P(A|B) = \frac{P(A\cap B)}{P(B)} = \frac{5}{11}$

x \ y	1	2	3	4	5	6
1						7
2						8
3						9
4						10
5						11
6	7	8	9	10	11	12

$P(B) = \frac{11}{36}$

$P(A\cap B) = \frac{5}{36}$

1) p-stwo całkowite

A – pacjent p możny

H_1 – zd. wylosowania kobiety

H_2 – mężczyzny

$P(H_1)=\frac{1}{3}$ $\quad P(H_2)=\frac{2}{3}$

H_1 $\quad H_2$

$P(A|H_1)=\frac{15}{100}$ $\quad P(A|H_2)=\frac{90}{100}$

A $\quad$ A

$P(A) = \frac{1}{3}\cdot\frac{15}{100} + \frac{2}{3}\cdot\frac{90}{100} = \frac{65}{100}$

$$P(H_k|A) = \frac{P(H_k\cap A)}{P(A)} = \frac{P(A|H_k)\,P(H_k)}{P(A)}$$

$$P(A|B) = \frac{P(A\cap B)}{P(B)}$$

$$P(A\cap B) = P(A|B)\ P(B)$$

$$P(H_k\cap A) = P(A\cap H_k) = P(A|H_k)\ P(H_k)$$

1) Tw. Bayesa

A – osoba z gr „0"

H_1 – kobieta

H_2 – mężczyzna

$P(H_1)=\frac{7}{15}$ $\quad P(H_2)=\frac{8}{15}$

H_1 $\quad H_2$

$P(A|H_1)=\frac{15}{100}$ $\quad P(A|H_2)=\frac{20}{100}$

A $\quad$ A

$P(H_1|A) = \frac{P(H_1\cap A)}{P(A)} = \frac{P(A|H_1)\ P(H_1)}{P(A|H_1)\cdot P(H_1) + P(A|H_2)\ P(H_2)}$

$= \frac{\frac{7}{15}\ \frac{15}{100}}{\frac{7}{15}\ \frac{15}{100} + \frac{8}{15}\ \frac{20}{100}} = \frac{105}{105+160} = \frac{105}{265} = \boxed{\frac{21}{53}}$