

$$1.1: \left(\frac{5}{6}\right)^4 = \frac{5^4}{6^4} = \frac{|A|}{|\Omega|} \Omega = \{(\omega_1, \omega_2, \omega_3, \omega_4) : \omega_i \in \{1, \dots, 6\}, i=1, \dots, 4\}$$

$$(1, 1, 1, 1), (2, 3, 1, 3)$$

$$|\Omega| = 6^4$$

$$A = \{\text{nepadne } 6\}$$

$$A = \{(\omega_1, \dots, \omega_4) : \omega_i \in \{1, \dots, 5\}, \forall i=1, \dots, 4\}$$

$$|A| = 5^4$$

$$1.2: \frac{1}{2} \binom{2}{1} = 1 \quad \left| \quad \frac{3}{4} = \underbrace{\frac{1}{2} \cdot \frac{1}{2}}_{\text{(le, ne)} \quad LR} + \underbrace{\frac{1}{2} \cdot \frac{1}{2}}_{\text{(ne, do)} \quad RL} + \underbrace{\frac{1}{2} \cdot \frac{1}{2}}_{\text{(ano, ano)} \quad LL} = \frac{3}{4} = \frac{|A|}{|\Omega|} \quad \left( \text{(ne, ne)} \quad RR \right)$$

$$\Omega = \{LL, LR, RL, RR\}, A = \{L, R, LR\}$$

$$\begin{matrix} \swarrow \\ \searrow \end{matrix} \quad \begin{matrix} \Omega_2 = \{0x, 1x, 2x\} \\ A_2 = \{1x, 2x\} \end{matrix} \quad \parallel \quad P(A_2) = P(\text{aspoň 1 líc}) = \frac{|A_2|}{|\Omega_2|} = \frac{2}{3}$$

neú! klasická Pst, ale:  $P(1x) = \frac{1}{2}, P(2x) = \frac{1}{4}$

$(\Omega_2, 2^{\Omega_2}, P)$  ... reálný prostor  $P(A_2) = P(1x) + P(2x) = \frac{3}{4}$   
 $(\Omega_2, 2^{\Omega_2})$  ... měřitelný prostor

$$1.3: a) 1 - \left(\frac{5}{6}\right)^4 = 1 - P(\text{žádná 6ka}) = \frac{6^4 - 5^4}{6^4} = 0,5177$$

$$b) 1 - \left(\frac{35}{36}\right)^{24} = 0,4914$$

klasická úloha:  $P(\text{aspoň 2x 6ka}) = 1 - P(0x 6) - P(1x 6) \Rightarrow \boxed{D}$   
 $\downarrow \quad \downarrow$   
 $\left(\frac{5}{6}\right)^{12} \quad 12 \cdot \frac{1}{6} \cdot \left(\frac{5}{6}\right)^{11}$

$$1.4 a) 1 - \left(\frac{5}{6}\right)^6 = 0,6651$$

$$b) \text{viz výše} \quad 1 - \left(\frac{5}{6}\right)^{12} - 12 \cdot \frac{1}{6} \left(\frac{5}{6}\right)^{11} = 0,6187$$

$$c) 1 - \left(\frac{5}{6}\right)^{18} - 18 \cdot \frac{1}{6} \left(\frac{5}{6}\right)^{17} - \binom{18}{2} \left(\frac{1}{6}\right)^2 \cdot \left(\frac{5}{6}\right)^{16} = 0,5973$$

$\uparrow \quad \uparrow \quad \uparrow$   
 $0x 6 \quad 1x 6 \quad 2x 6$

1.5: předp.: 365 dní v roce

narození nezávislé na sobě, rovnoměrně během roku

$$P(\exists \text{ člověk s nar. dnes}) = 1 - P(\text{dnes nikdo}) = 1 - \left(\frac{364}{365}\right)^m$$

pro  $m=253$  je  $\approx 0,15005$