

①  $\square \quad \square \square \quad \square \square \square \dots$

$$N = n(n+1)/2 \Rightarrow N = 6 \cdot (6+1)/2 = 21 //$$

$$\Rightarrow E(X) = 1 \cdot \frac{1}{21} + 2 \cdot \frac{2}{21} + 3 \cdot \frac{3}{21} + 4 \cdot \frac{4}{21} + 5 \cdot \frac{5}{21} + 6 \cdot \frac{6}{21} = \frac{13}{3} \approx 4,3$$

$$\Rightarrow \text{Var}(X) = \left(\frac{13}{3} - 1\right)^2 \cdot \frac{1}{21} + \left(\frac{13}{3} - 2\right)^2 \cdot \frac{2}{21} + \left(\frac{13}{3} - 3\right)^2 \cdot \frac{3}{21} + \left(\frac{13}{3} - 4\right)^2 \cdot \frac{4}{21} \\ + \left(\frac{13}{3} - 5\right)^2 \cdot \frac{5}{21} + \left(\frac{13}{3} - 6\right)^2 \cdot \frac{6}{21} = \frac{20}{9} \approx 2,2$$

③ A: Probability of being a 6-sided dice.  
B: Probability of getting a 5.

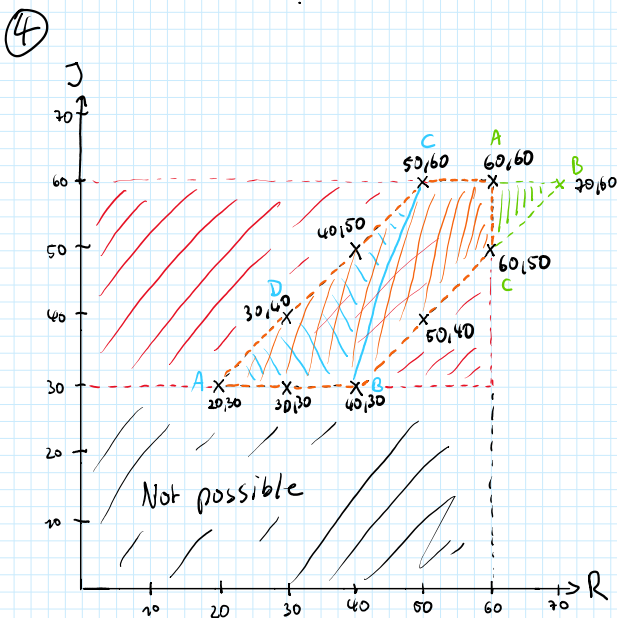
$$P(A|B) = \frac{P(A \cap B)}{P(B)}$$

$$\Rightarrow P(B) = \frac{1}{2} \cdot \frac{1}{6} + \frac{1}{2} \cdot \frac{1}{12} = \frac{1}{8}$$

$$\Rightarrow P(A \cap B) = \frac{1}{2} \cdot \frac{1}{6} = \frac{1}{12}$$

$$\Rightarrow P(A|B) = \frac{1}{12} : \frac{1}{8} = \frac{2}{3}$$

A: The probability, that the picked 5 belongs to the 6-sided dice, amounts  $2/3 \approx 0,67$  (67 %).



$$60 \cdot 30 = 1800 //$$

$$\vec{AC} = \sqrt{(50-20)^2 + (60-30)^2} = 42,4264$$

$$\vec{DB} = \sqrt{(40-30)^2 + (30-40)^2} = 14,1421$$

$$\text{Fläche} = 42,4264 \cdot 14,1421 / 2 = 300 //$$

$$\vec{AB} = \sqrt{(70-60)^2 + (60-60)^2} = 10$$

$$\vec{AC} = \sqrt{(60-60)^2 + (60-50)^2} = 10$$

$$\text{Fläche} = 10 \cdot 10 / 2 = 50 //$$

$$\Rightarrow \text{area of success} = 2 \cdot 300 - 50 = 550 //$$

$$\Rightarrow \frac{100}{1800} \cdot 550 \approx 30,56 //$$

A: The probability, that Romeo and Juliet meet amounts around 30,56 %.