1.10

$P(A)=0,6 \quad P(B)=0,5 \quad P(A \cup B)=0,9$

1)

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

$0,9 = 0,6 + 0,5 - P(A \cap B)$

$P(A \cap B) = 0,11 - 0,9$

2)

$P(E \setminus A) = 1 - 0,6 = 0,4$

3)

$P(E \setminus B) = 1 - 0,5 = 0,5$

4)

$(E \setminus A) \cap (E \setminus B) = P(E) - P(A \cup B)$

5) $= 1 - 0,9 = 0,1$

$(E \setminus A) \cup (E \setminus B) = P(E \setminus A) + P(E \setminus B) - P(E \setminus A \cap E \setminus B)$

$= 0,4 + 0,5 - 0,1$

$= 0,8$

1.3.1

Formel = $\frac{\text{günstige Ereignisse}}{E}$

1. $P(A) = \frac{3}{6} = \frac{1}{2}$
2. $P(B) = \frac{3}{6} = \frac{1}{2}$

3 $C = \{3, 5, 7, 9, 11\}$

$P(C) \sum_{x=1}^{12} P(x) \cdot 1(x \in C) = \frac{1}{18} \cdot \frac{1}{9} \cdot \frac{1}{6} \cdot \frac{1}{9} \cdot \frac{1}{18} = \frac{1}{16} + \frac{2}{18} + \frac{3}{18} + \frac{2}{18} \cdot \frac{1}{18} = \frac{9}{18}$

Skal de være parvis uafhængige, skal

1 $P(A_1 \cap A_2) = P(A_1)P(A_2)$

2 $P(A_1 \cap A_3) = P(A_1)P(A_3)$

3 $P(A_2 \cap A_3) = P(A_2)P(A_3)$

4 $P(A_1 \cap A_2 \cap A_3) = P(A_1)P(A_2)P(A_3)$ ~

Det simultane ssh for $P(A_1 \cap B)$, $P(A_1 \cap C)$ og $P(B \cap C)$

er $\frac{1}{4} = \frac{1}{2} \cdot \frac{1}{2}$

$P(A) \cdot P(B) = \frac{1}{2} \cdot \frac{1}{2} = \frac{1}{4}$

$P(A) \cdot P(C) = \frac{1}{2} \cdot \frac{1}{2} = \frac{1}{4}$

$P(B) \cdot P(C) = \frac{1}{2} \cdot \frac{1}{2} = \frac{1}{4}$

1.7

1) $P(A_1) = P(A_2) = P(A_3) = 1$

Derfor $\frac{1}{3} = \frac{1}{3} = \frac{1}{3} = 1$

2) $P(A_1) = P(A_2)$ og $P(A_3) = \frac{1}{2}$

$\frac{1}{4} = \frac{1}{4} + \frac{1}{2} = 1$

3) $P(A_1) = 2P(A_2) = 3P(A_3)$

$\frac{1}{3} = 2\frac{1}{6} = 3\frac{1}{9} = 1$

1.2

1) $P(A) = 0,4$ og $P(A \cup B) = 0.6$

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

$0,6 = 0,4 + P(B) - 0$

$0,2 = P(B)$

når a og b ikke kan skje simultant er $P(A \cap B) = 0$

2)

Hvis $P(A \cap B) = P(A) \cdot P(B)$

$P(A) \cdot P(B) = P(A) + P(B) - P(A \cup B)$

$0,4 \cdot P(B) = 0,4 + P(B) + 0,6$

$(0,4 - 1)P(B) = -0,2$

$P(B) = \frac{-0,2}{-0,6} = \frac{1}{3}$

0,1333

$0,4 + \frac{1}{5}$

Dette kan checkes ved

hs: $\frac{2}{5} \cdot \frac{1}{3} = \frac{2}{15}$

vs: $\frac{2}{5} + \frac{1}{3} - \frac{3}{5} = \frac{6}{15} + \frac{5}{15} - \frac{9}{15} = \frac{2}{15}$