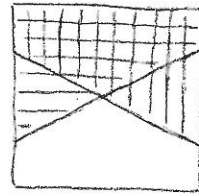2   jf. eks. 1.3.2 og eks. 1.5.3

$$P(A) = P(B) = 0,5$$

$$P(A \cap B) = 0,35$$

$$P(A \cup B) = 0,5 + 0,5 - 0,35 = 0,65$$

$$P(A \setminus B) = 0,5 - 0,35 = 0,15$$

$$P(A^c \cap B^c) = 1 - P(A \cup B) = 1 - 0,65 = 0,35$$

$$P(A \triangle B) = 0,15 + 0,15 = 0,3$$

$$P(A \mid B) = \frac{0,35}{0,5} = 0,7$$

4   a B_1

b $B_1^c \cap B_2 \cap B_3$

c $B_1 \cap B_2 \cap B_3 \cap B_4$

d $(B_1^c \cap B_2 \cap B_3 \cap B_4 \cap B_5) \cup (B_1 \cap B_2^c \cap B_3 \cap B_4 \cap B_5)$
    $\cup (B_1 \cap B_2 \cap B_3^c \cap B_4 \cap B_5) \cup (B_1 \cap B_2 \cap B_3 \cap B_4^c \cap B_5)$

e $B_1 \cap B_2 \cap B_3 \cap B_4^c \cap B_5^c \cap B_6^c \cap B_7^c$

8    $A^c \cap B^c \subseteq C^c$, idet $a < 10 \wedge b < 10 \Rightarrow a + b < 20$

$C^c \supseteq A^c \cap B^c \iff (C^c)^c \subseteq (A^c \cap B^c)^c \iff C \subseteq A \cup B$

17   a $\dfrac{23 \cdot 22 \cdot 21}{23^3} = 0,8733$

b $\dfrac{10 \cdot 9 \cdot 8}{10^3} = 0,72$

c $\dfrac{23}{23^3} = 0,0019$

d $\dfrac{5^3}{10^3} = \dfrac{1}{8} = 0,125$

e $0,8733 \cdot \dfrac{10}{10^3} = 0,0087$

1.4

18 a $5 \cdot \left(\frac{1}{26}\right)^6 = 1{,}6 \cdot 10^{-8}$

   b $5 \cdot \frac{1}{26} \cdots \frac{1}{21} = 3{,}0 \cdot 10^{-8}$

22 a $\frac{8 \cdot 7 \cdot 6}{64 \cdot 63 \cdot 62} = \frac{1}{8 \cdot 3 \cdot 31} = \frac{1}{744}$

   b $\frac{32 \cdot 31 \cdot 30}{64 \cdot 63 \cdot 62} = \frac{5}{21 \cdot 2} = \frac{5}{42}$

   c $8 \frac{8 \cdot 7 \cdot 6}{64 \cdot 63 \cdot 62} = \frac{8}{744} = \frac{1}{93}$

   d $8 \cdot 2 \frac{4 \cdot 3 \cdot 2}{64 \cdot 63 \cdot 62} = \frac{1}{21 \cdot 31} = \frac{1}{651}$

24 * $P(r \cup h \cup s) - P(r \cap h \cap s)$

   $= P(r) + P(h) + P(s) - P(r \cap h) - P(h \cap s) - P(s \cap r)$

   $= P(r) + P(h) - P(r \cap h) + P(h) + P(s) - P(h \cap s)$
      $+ P(s) + P(r) - P(s \cap r) - P(r) - P(h) - P(s)$

   $= P(r \cup h) + P(h \cup s) + P(s \cup r) - P(r) - P(h) - P(s)$

   $= 3 \frac{\binom{2n}{k}}{\binom{3n}{k}} - 3 \frac{\binom{n}{k}}{\binom{3n}{k}} = \frac{3\left(\binom{2n}{k} - \binom{n}{k}\right)}{\binom{3n}{k}}$

28 a $\frac{1 \cdot \binom{6}{2}}{\binom{10}{3}} = \frac{15}{120} = 0{,}125$

   b $\frac{1 \cdot 1 \cdot 3}{\binom{10}{3}} = \frac{3}{120} = 0{,}025$

   c $\frac{1 \cdot 1 \cdot (k - j - 1)}{\binom{n}{3}} = \frac{k - j - 1}{\binom{n}{3}}$

29   $\frac{(m)_{k-1}}{(m+n)_{k-1}} \cdot \frac{m}{m+n-(k-1)} = \frac{m (m)_{k-1}}{(m+n)_k}$

*   (svær opgave)

40   a $P(H_1 \cap H_2) = (P(H))^2 = \left(\frac{1}{2}\right)^2 = \frac{1}{4}$

       b $P(H_1 | H_2) = \dfrac{(P(H))^2}{P(H)} = P(H) = \frac{1}{2}$

42   Nej $(\ 0{,}95 \neq 0{,}99 \cdot 0{,}90\ )$