

Lösung Seite 46

x	<b>30</b>	<b>32</b>	<b>38</b>	<b>40</b>		
h(x)	3	5	1	3	<b>12</b>	
f(x)	25%	42%	8%	25%		
x*h(x)	90	160	38	120	<b>408</b>	<u><b>34</b></u>

x <sup>2</sup>	900	1024	1444	1600		Varianz	16,00		
x <sup>2</sup> *h(x)	2700	5120	1444	4800	<b>14064</b>	Standard	4,00	VC	12%

x-x(z)	2	0	6	8			
x-x(z)  *h(x)	6	0	6	24	<b>36</b>	MAD	3,00

$$Q_{0,25} = 0,25 \cdot n = 0,25 \cdot 12 = 3 \in \mathbb{Z}$$

$$\Rightarrow \frac{1}{2} \cdot (x_3 + x_4) = \frac{1}{2} \cdot (30 + 32) = 31 //$$

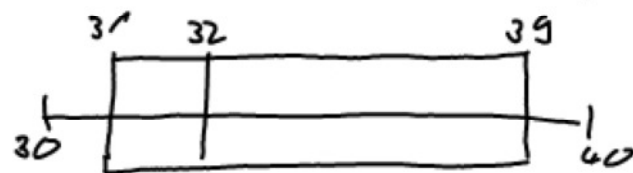
$$Q_{0,75} = 0,75 \cdot n = 0,75 \cdot 12 = 9 \in \mathbb{Z}$$

$$\Rightarrow \frac{1}{2} \cdot (x_9 + x_{10}) = \frac{1}{2} \cdot (38 + 40) = 39 //$$

$$IQR : Q_{0,75} - Q_{0,25} = 39 - 31 = 8$$

$$\text{Median} : Q_{0,5} = 0,5 \cdot 12 = 6 \in \mathbb{Z}$$

$$\Rightarrow \frac{1}{2} \cdot (x_6 + x_7) = \frac{1}{2} \cdot (32 + 32) = 32 //$$



$$\sum x_i^2 = 14.064$$

$$s^2 = \frac{1}{n} \cdot \sum x_i^2 - \mu^2$$

$$= \frac{1}{12} \cdot 14.064 - 34^2$$

SSA, Nr. 3)  $n = 6$  ;  $k = 3$

$$\binom{n}{k} = \frac{n!}{k! \cdot (n-k)!}$$

ohne WDH, mit Reihenfolge

$$\binom{6}{3} \cdot 3! = \frac{6!}{3!(6-3)!} \cdot 3! = \frac{6!}{3!} = 6 \cdot 5 \cdot 4 = 120$$

$\hookrightarrow \frac{6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}{3 \cdot 2 \cdot 1}$

Nr. 5)  $n = 3$  ;  $k = 3$

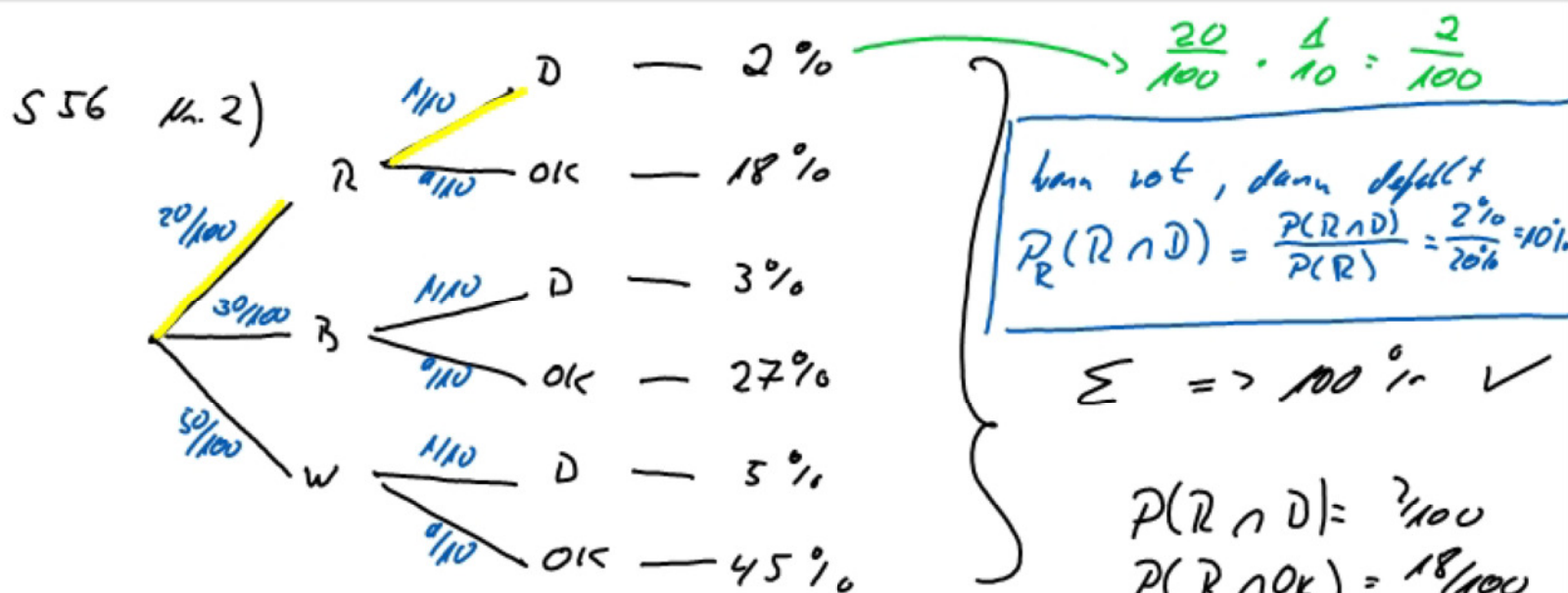
a) mit WDH, ohne Reihenfolge  $\frac{5!}{3! \cdot (5-3)!} \star$

$$\binom{3+3-1}{3} = \binom{5}{3} = \frac{5!}{3! \cdot 2!} = \frac{5 \cdot 4}{2} = 10$$

$\xrightarrow{\quad \quad \quad} \frac{5!}{3! \cdot (5-3)!} \star$

$$\star \frac{5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}{(3 \cdot 2 \cdot 1) (2 \cdot 1)}$$

- b)  $M = \{ (1,1,1) ; (2,2,2) ; (3,3,3) ; (1,1,2) ; (2,2,3) ; (1,2,3) ; (1,2,2) ; (1,3,3) ; (2,3,3) ; (1,1,3) \}$

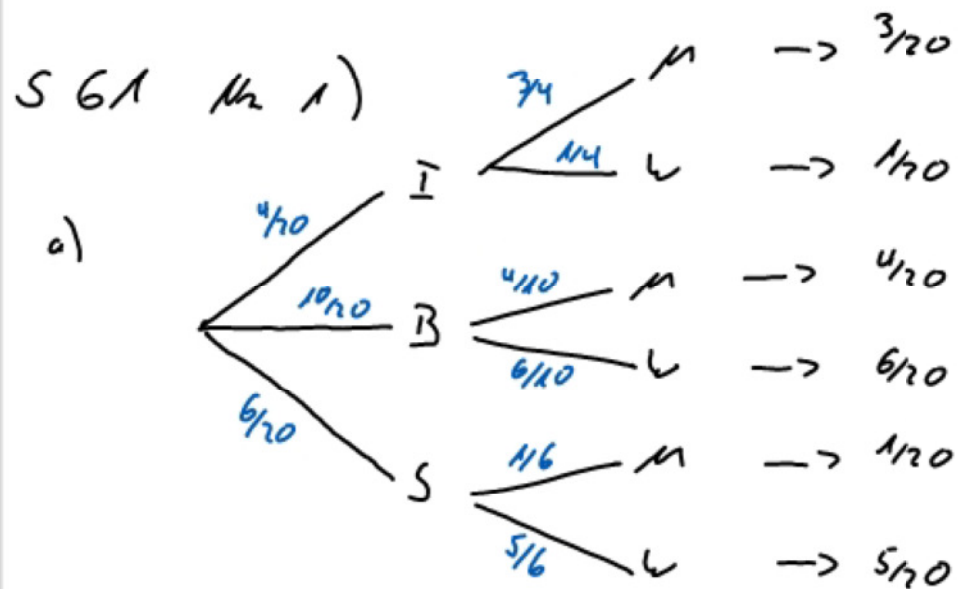


b)  $P(R \cap D) = \frac{20}{100} \cdot \frac{1}{10} = 2\%$

c)  $P(R \cap OK) = \left(\frac{20}{100} \cdot \frac{9}{10}\right)^2 = (18\%)^2 \Rightarrow 0,0324$

ohne WDH:  $\frac{18}{100} \cdot \frac{17}{99} = 0,031$

$\rightarrow P(RR) + P(BB) + P(WW) = \frac{20}{100} \cdot \frac{19}{99} + \frac{30}{100} \cdot \frac{29}{99} + \frac{50}{100} \cdot \frac{49}{99}$   
 $\Rightarrow 37,37\%$



b)  $P(MMM) + P(WWW) = \frac{8}{20} \cdot \frac{7}{19} \cdot \frac{6}{18} + \frac{12}{20} \cdot \frac{11}{19} \cdot \frac{10}{18} = 24,21\%$

$$\left. \begin{aligned} P(III) &= \frac{4}{20} \cdot \frac{3}{19} \cdot \frac{2}{18} \\ P(BBB) &= \frac{10}{20} \cdot \frac{9}{19} \cdot \frac{8}{18} \\ P(SSS) &= \frac{6}{20} \cdot \frac{5}{19} \cdot \frac{4}{18} \end{aligned} \right\} \Sigma = 12,63\%$$

IBJ ; ISD  
 BIS ; BSI  
 SBI , SIB

$P(IBS) \cdot \text{Permutation} : \left( \frac{4}{20} \cdot \frac{10}{19} \cdot \frac{6}{18} \right) \cdot 3! = 21,05\%$

	I	B	S	
M	<u><math>\frac{3}{20}</math></u>	$\frac{4}{20}$	$\frac{1}{20}$	$\frac{8}{20}$
w	$\frac{1}{20}$	$\frac{6}{20}$	$\frac{5}{20}$	$\frac{12}{20}$
	<u><math>\frac{4}{20}</math></u>	$\frac{10}{20}$	$\frac{6}{20}$	✓

$$P_{\bar{I}}(I \cap M) = \frac{\frac{3}{20}}{\frac{4}{20}} = \frac{3}{4} = 75\%$$