ISt Ü1

(5) box containing 3×HH 2×TT 4×HT

(a) random coin is tossed probability of tail?

$\frac{2}{9}$ ... probability of choosing TT coin 1 ... probability of getting tail

$\frac{4}{9}$ ... probability of choosing HT coin $\frac{1}{2}$ ... probability of getting tail

$\Rightarrow \frac{2}{9} + \frac{4}{9} \cdot \frac{1}{2} = \frac{4+4}{18} = \frac{4}{9} = 0,4444$

(b) tail probability of having selected TT coin?

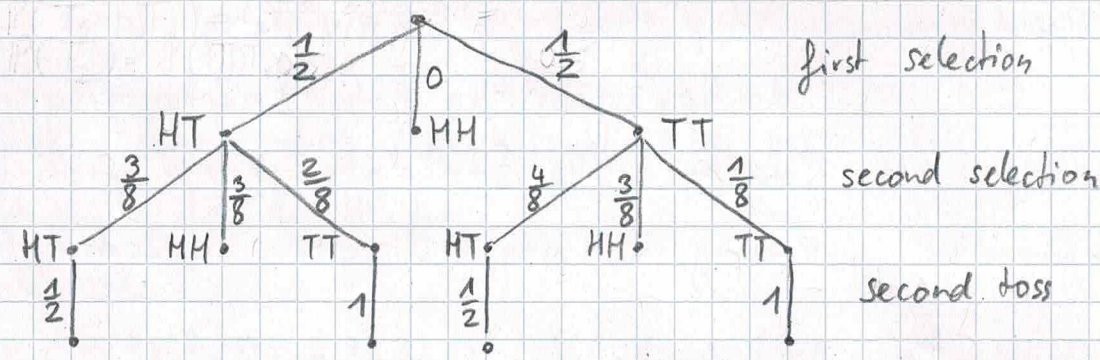
probability of having selected HT coin?

$$P(TT|T) = \frac{P(TT \cap T)}{P(T)} = \frac{P(TT)}{P(T)} = \frac{\frac{2}{9}}{\frac{4}{9}} = \frac{1}{2} = 0,5$$

$$P(HT|T) = \frac{P(HT \cap T)}{P(T)} = \frac{\frac{4}{9} \cdot \frac{1}{2}}{\frac{4}{9}} = \frac{\frac{4}{18}}{\frac{4}{9}} = \frac{1}{2} = 0,5 \; (= 1 - P(TT|T))$$

(c) first toss: tail second coin randomly selected and tossed

probability of getting tail again?



$\Rightarrow \frac{1}{2} \cdot \frac{3}{8} \cdot \frac{1}{2} + \frac{1}{2} \cdot \frac{2}{8} \cdot 1 + \frac{1}{2} \cdot \frac{4}{8} \cdot \frac{1}{2} + \frac{1}{2} \cdot \frac{1}{8} \cdot 1 = \frac{3}{32} + \frac{1}{8} + \frac{1}{8} + \frac{1}{16}$

$= \frac{13}{32} = 0,4063$