

ProbabilityAssignment

$$\textcircled{1} \quad \frac{1}{2} \cdot \frac{6}{6} = \frac{1}{6} \cdot \frac{1}{6}$$

4
6

$$\frac{3}{6} \cdot \frac{1}{6} = \frac{3}{36} \cdot \frac{1}{12} = \frac{1}{12}$$

$$\textcircled{2} \quad 1 \underline{1}, \underline{1} \underline{2}, \underline{1} \underline{3}, \underline{1} \underline{4}, \underline{1} \underline{5}$$

~~$$\textcircled{2} \quad 2 \underline{1}, \underline{2} \underline{2}, \underline{2} \underline{3}, \underline{2} \underline{4}$$~~

$$\underline{3}, \underline{3}$$

$$= \frac{9}{36} = \frac{1}{4}$$

~~at least~~ Only 1 Head:

H H H
H H T
H T H
H T T
T T H
T H T
T H H
T T T

$$\frac{P^{(1)}_1}{2^n} = \frac{n!}{k!(n-k)!}$$

one head

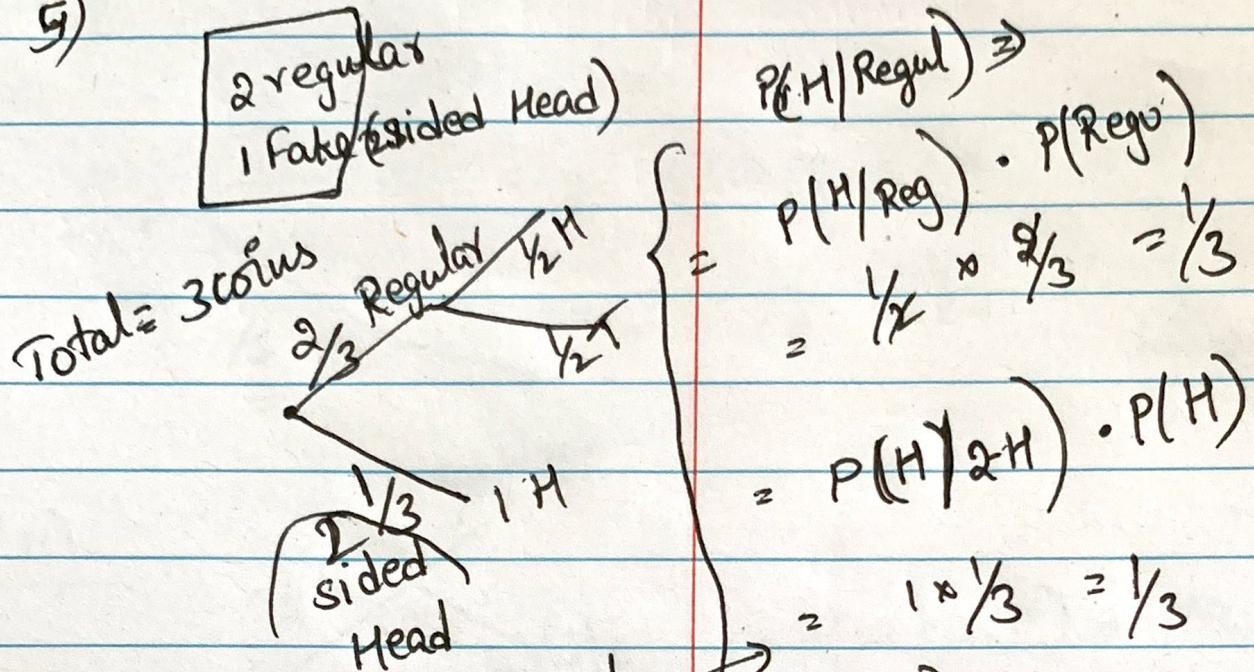
$$\text{All Tails} = \frac{1}{8}$$

$$= \frac{3 \times 2 \times 1}{1(3-1)!} = \frac{3}{8} \cdot \frac{2^3}{8 \times 2 \times 1} = \frac{3}{8} \cdot \frac{1}{8} = \frac{3}{64}$$

$$\text{At least two Heads} = 1 - \frac{3}{8} - \frac{1}{8}$$

$$= \frac{8-4}{8} = \frac{4}{8} = \frac{1}{2}$$

5)



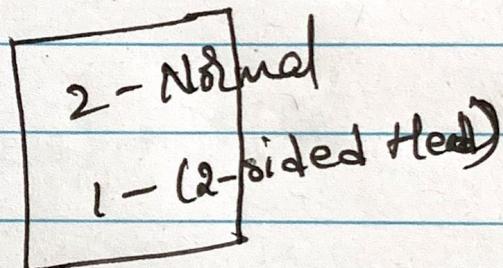
a) $P(H) = \frac{2}{3}$

~~$P(H|R)$ and $P(H|2SH)$~~

$$\begin{aligned}
 & \text{sum of } \\
 & P(H|2SH) = \frac{1}{3} * 1 \\
 & = \frac{1}{3}
 \end{aligned}$$

b) ~~$P(H)$~~ = ~~$\frac{P(H)}{P(H) + P(2SH)}$~~

$$\begin{aligned}
 & P(2SH|H) = \frac{\frac{1}{3} * 1}{\frac{2}{3}} \\
 & = \frac{1}{2} \cdot \frac{1}{70\%} = \frac{70}{100} = \frac{7}{10}
 \end{aligned}$$



b) a) $P(\text{coffee}) = 70\% = \frac{70}{100} = \frac{7}{10}$

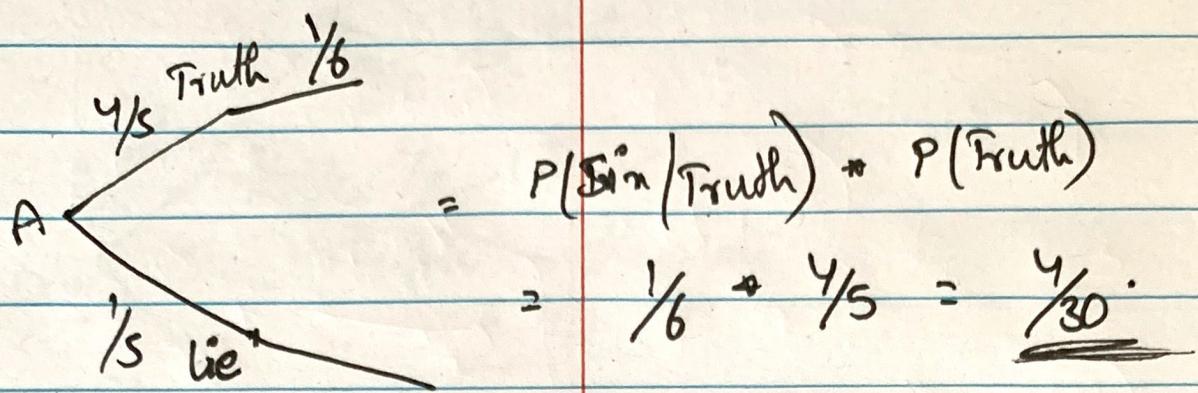
b) $P(\text{cake}) = 40\% = \frac{40}{100} = \frac{2}{5}$

c) $P(\text{coffee} \cap \text{cake}) = 20\% = \frac{20}{100} = \frac{1}{5}$

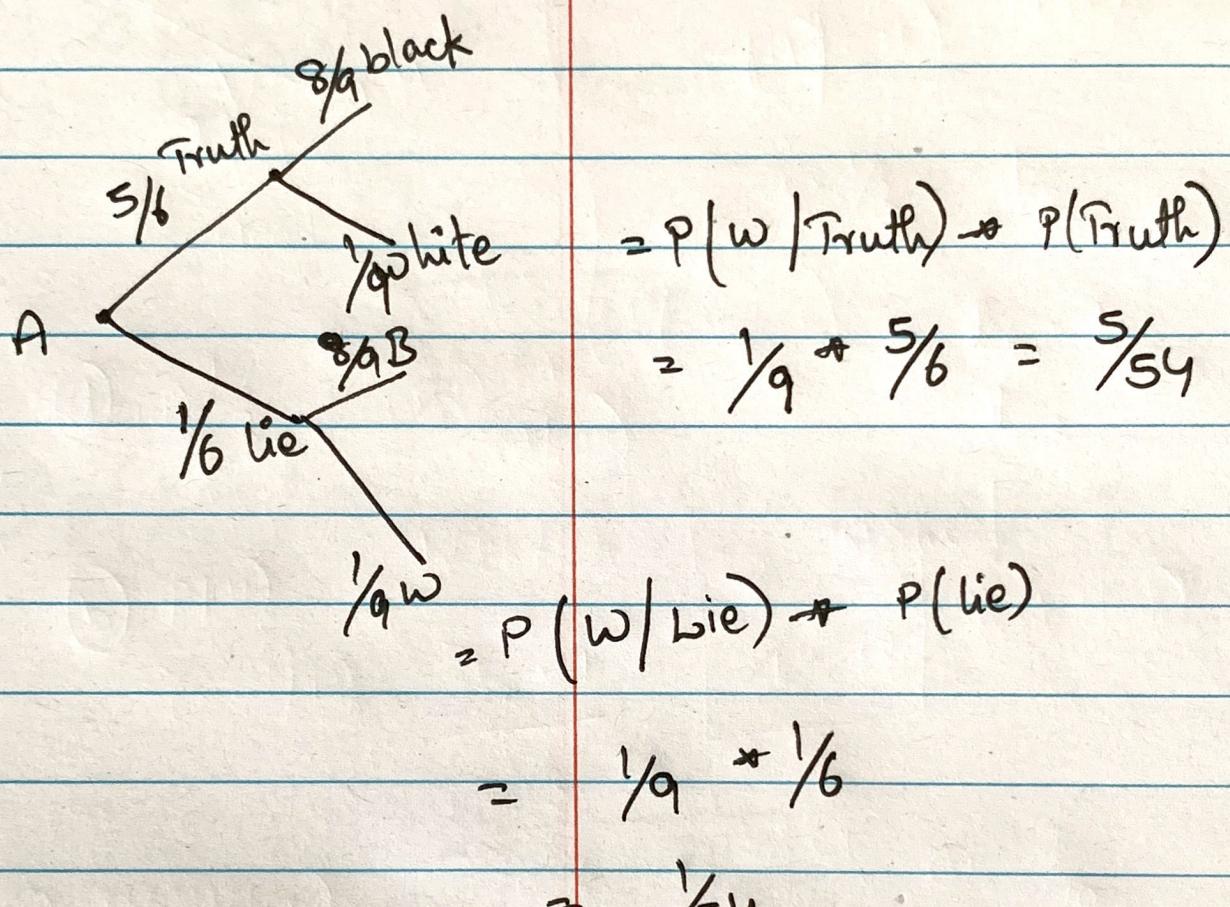
$$P(\text{cake} \cup \text{coffee}) = \frac{7}{10} + \frac{2}{5} - \frac{1}{5}$$

$$\begin{aligned}
 & = \frac{7+4-2}{10} \\
 & = \frac{9}{10} \\
 & = 0.9
 \end{aligned}$$

12)



11)



$$P(\text{white}) = \frac{5}{54} + \frac{1}{54} = \frac{6}{54} = \underline{\underline{\frac{1}{9}}}.$$

$$4) P(T|R) = \frac{1}{2} \rightarrow P(w) = \frac{1}{2}$$

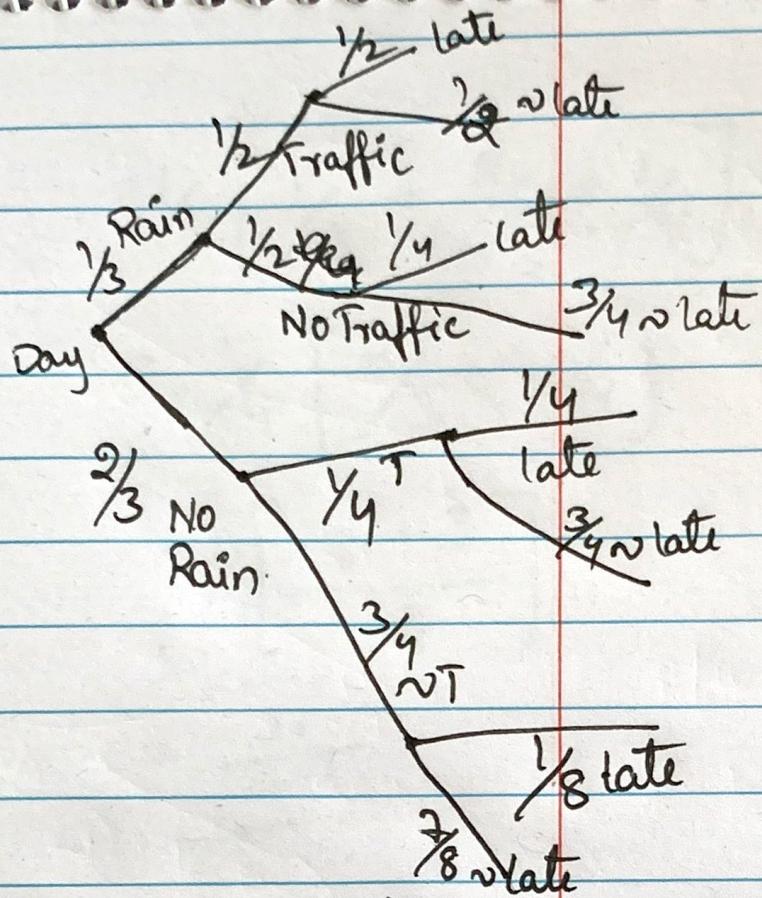
$$P(T/\sim R) = \frac{1}{4}$$

$$P(R) = \frac{1}{3}$$

$$P(\sim T/\sim R) = \rightarrow P(w) = \frac{1}{8}$$

$$P(\sim T|R) = 0.25 = \frac{1}{4}$$

$$P(T/\sim R) = 0.25 = \frac{1}{4}$$



$$\textcircled{a} \quad P(L|T \cap \sim R) = P(L|T) \rightarrow P(T|\sim R) \rightarrow P(\sim R)$$

$$= \frac{1}{4} \times \frac{1}{4} \times \frac{2}{3}$$

$$= \frac{1}{24}$$

$$P(\sim L|T \cap \sim R) = 1 - \frac{1}{24}$$

$$= \frac{23}{24}$$

$$P(\text{not late}) = \frac{2}{3} \times \frac{1}{4} \times \left(1 - \frac{1}{4}\right)$$

$$= \frac{2}{3} \times \frac{1}{4} \times \frac{3}{4}$$

$$\textcircled{b}_2 \quad P(\text{late}) = \frac{1}{8}$$

$$= \frac{1}{3} \times \frac{1}{2} \times \frac{1}{2} + \frac{1}{3} \times \frac{1}{2} \times \frac{1}{4} + \left[\frac{1}{3} \times \frac{1}{4} \times \frac{1}{4} \right] + \left[\frac{2}{3} \times \frac{1}{4} \times \frac{1}{4} \right]$$

$$= \frac{1}{12} + \frac{1}{24} + \frac{1}{24} + \frac{1}{16} = \frac{1}{4} \left[\frac{1}{3} + \frac{1}{6} + \frac{1}{6} + \frac{1}{4} \right]$$

$$= \frac{1}{4} \left[\frac{1}{3} + \frac{2}{6_3} + \frac{1}{4} \right]$$

$$= \frac{1}{4} \left[\frac{2}{3} + \frac{1}{4} \right]$$

$$= \frac{1}{4} \left[\frac{8+3}{12} \right]$$

$$= \underline{\frac{11}{48}}.$$

c) $P(R/L) = \underline{\underline{\frac{11}{48}}} = \underline{\underline{\frac{11}{48}}}$

$$= \underline{\underline{\frac{\frac{1}{12} + \frac{1}{24}}{11/48}}} = \underline{\underline{\frac{\frac{3}{24}}{\frac{11}{48}}}}$$

$$= \underline{\underline{\frac{6}{11}}}.$$