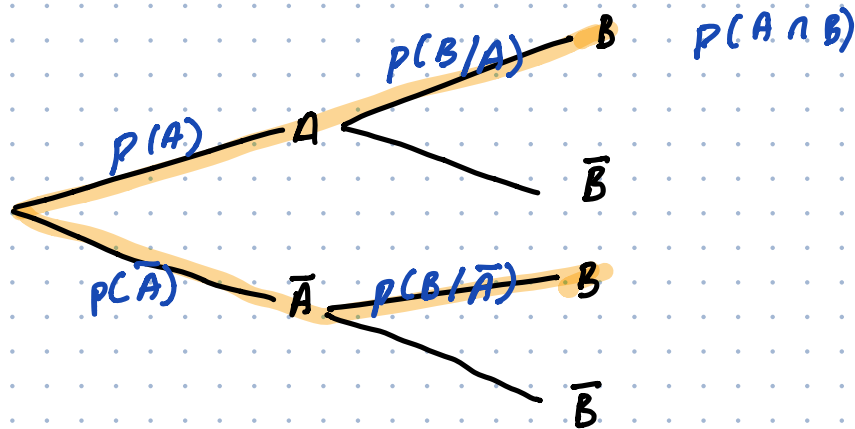


Bayes' Theorem

Sometimes we know that one event, **B, has happened**, and wonder what the probability is that a preceding (prior) event, A, also happened.



$$\begin{aligned} P(A/B) &= \frac{P(A) P(B|A)}{P(A) P(B|A) + P(\bar{A}) P(B|\bar{A})} \leftarrow \\ &= \frac{P(A) P(B|A)}{P(B)} \leftarrow \\ &= \frac{P(A \cap B)}{P(B)} \end{aligned}$$