

The principal idea of Bayes's Theorem is one of conditional probabilities:

A = the prior event (the thing that happens first)

B = the posterior event (the thing that happens second, and may depend on A)

$P(A|B)$ = probability that the prior condition existed, given an occurrence of the second event

Bayes's Theorem states that:

$$P(A|B) = \frac{P(B|A) \times P(A)}{P(B|A) \times P(A) + P(B|\tilde{A}) \times P(\tilde{A})}$$