Probability of an outcome of two independent events

Consider the following example:
Two coins are tossed. Event A is getting heads on the first coin, event B is getting tails on the second coin.

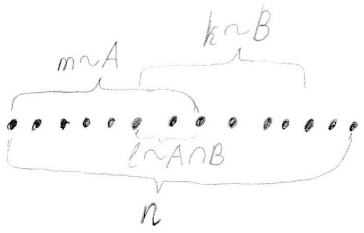

Figure 1

This problem can be modeled by Figure 1, where each dot represents a possible outcome.
Where:
m - The number of outcomes that satisfy event A.
k - The number of outcomes that satisfy B.
l - The number of outcomes that satisfy both A and B.
n - The total number of outcomes.
$P(A \cap B) = \frac{l}{n}$
$P(B|A) = \frac{l}{m}$
$P(A) = \frac{m}{n}$

$$P(A \cap B) = \frac{l}{n} = \frac{l \cdot m}{n \cdot m} = \frac{l}{m} \cdot \frac{m}{n}$$

$$P(A \cap B) = P(A) \cdot P(B|A)$$

The example given above, shows two independent events (which do not have to occur at the same time).

Please note that this representation is only valid for INDEPENDENT EVENTS!