

rules about probability

definition of conditional probability:

$$P(A|B) = \frac{P(A \text{ and } B)}{P(B)}$$

Addition rule:

$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$

Multiplication rule for independent events only:

$$P(A \text{ and } B) = P(A) \cdot P(B)$$

tests for independence:

- Conditional probability test

A and B are independent if

$$P(A|B) = P(A) \text{ and } P(B|A) = P(B)$$

- Multiplication rule test

A and B are independent if

$$P(A \text{ and } B) = P(A) \cdot P(B)$$