$$A = \{\text{ball on a roulette wheel landing on } 6\}$$

$$B = \{\text{ball on a roulette wheel landing on an even number}\} = \{\text{ball on } 2, (\text{or}) \ 4, 6, 8, \dots, 30, 32, 34, 36\}$$

$$P(A) = \frac{1}{36}$$

$$P(B) = \frac{18 \ (because \ ball \ can \ be \ on \ 18 \ numbers)}{36} = \frac{1}{2}$$

A finite set of events is mutually independent if every event is independent of any intersection of the other events.[3] That is, if for every subset $\{A_n\}$

$$P\left(\bigcap_{i=1}^{n} A_i\right) = \prod_{i=1}^{n} P(A_i)$$

This is called the *multiplication rule* for independent events.

Two events A and B are independent if their joint probability equals the product of their probabilities:

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

We have: $A \cap B = \{\text{ball on a roulette wheel landing on } 6\} = A$

$P(A \cap B) = P(A) = \frac{1}{36} \neq \frac{1}{72} = P(A) * P(B); \quad P(A \cap B) \neq P(A) * P(B)$, so A and B are dependent.