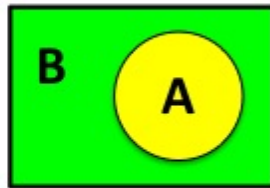Rubens Zimbres

Probability

Marginal Probability
long hair

$$\sum Prob = 1 \quad P(A) = \frac{P(A)}{\sum P(A,B)}$$
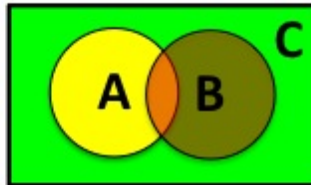
$$0 < Prob < 1 \quad P(\tilde{A}) = 1 - A$$

Conditional Probability (Bayes)
long hair, given that is woman

$$P(A|B) = \frac{P(B|A).P(A)}{P(B)} = \frac{P(A \cap B)}{P(B)}$$

Independent events
coins

$$P(A \cap B) = P(A).P(B)$$
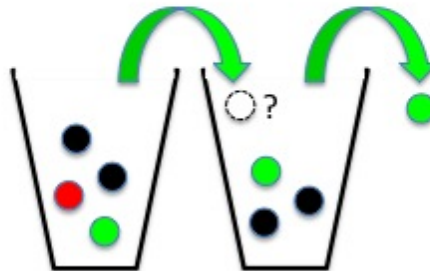
Dependent events
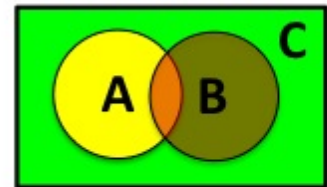**cards**

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

Total Probability
jar

$$P(2nd\ Green) = P(Green|1st\ Black) + P(Green|1st\ Green) + P(Green|1st\ Red)$$

Joint Probability

long hair and woman

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

long hair or woman

$$P(AUB) = P(A) + P(B) - P(A \cap B)$$

not long hair and not woman

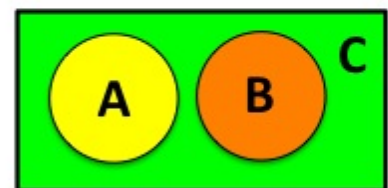$$P(\overline{A \cap B}) = 1 - P(A).P(B)$$

neither long hair nor woman

$$P(\overline{A \cup B}) = 1 - (P(A) + P(B) - P(A \cap B))$$

Disjoint Probability
Mutually Exclusive
weather and coins

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

$$P(AUB) = P(A) + P(B)$$