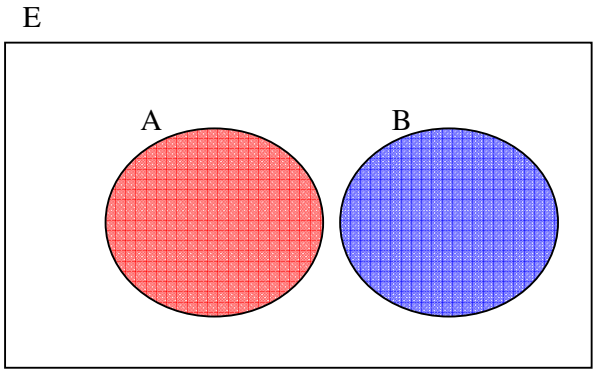
Probability

Español	Inglés
Experimento aleatorio	Random experiment
Suceso	Event
Espacio muestral (E)	Sample space = the set of all possible outcomes of an experiment
Suceso elemental	Elementary event
Suceso compuesto	Compound event
Suceso cierto	Certain event
Suceso imposible	Impossible event
Suceso contrario	Complementary event the **complement** of any event *A* is the event [not *A*]
Espacio de Sucesos	Event space
Unión de sucesos	Union of events $A \cup B$
Intersección de sucesos	Intersection of events $A \cap B$
Sucesos incompatibles	Mutually exclusive events A and B are mutually exclusive events if $A \cap B = 0$
Sucesos compatibles	Not mutually exclusive events
Sucesos independientes	Independent events A and B are independent events if the occurrence (or non-occurrence) of one event does not affect the occurrence of the other
Sucesos dependientes	Dependent events
Diagrama en árbol	Tree diagram
Regla de Laplace: $P(A) = \frac{\textit{número de casos favorables al suceso A}}{\textit{número de casos posibles}}$	Theoretical probability = based on what we theoretically expect to occur. $P(A) = \frac{\textit{the number of members of the event A}}{\textit{the total number of possible outcomes}}$
Ley de los grandes números	Experimental probability = relative frecuency

Summary of probabilities

Event	Probability
A	$P(A) \in [0, 1]$
not A (complementary event of A)	$P(\overline{A}) = 1 - P(A)$
E = (Sample space)	$P(E) = 1$
Ø = (Impossible event)	$P(\varnothing) = 0$
A or B	P(either A or B) • $P(A \cup B) = P(A) + P(B)$ if A and B are mutually exclusive • $P(A \cup B) = P(A) + P(B) - P(A \cap B)$ if A and B are not mutually exclusive. Read as: P(either A or B) = P(A) + P(B) – P(both A and B)

Mutually exclusive events (Sucesos incompatibles)



Times when I am truly happy (A)

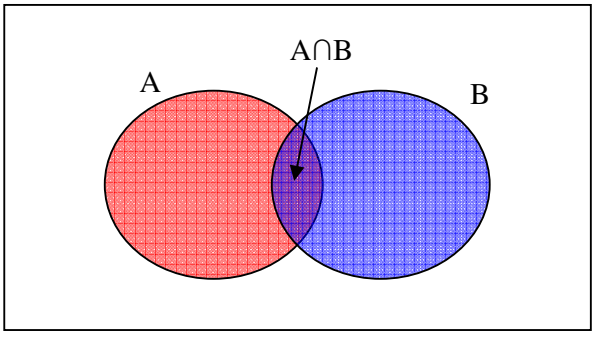
Times when I am wearing pants (B)

$$A \cap B = \varnothing$$

$$P(A \cap B) = 0$$

$$P(A \cup B) = P(A) + P(B)$$

Not mutually exclusive events (Sucesos compatibles)



Times when I am truly happy (A)

Times when I am wearing pants (B)

$$A \cap B \neq \varnothing$$

$$P(A \cap B) \neq 0$$

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