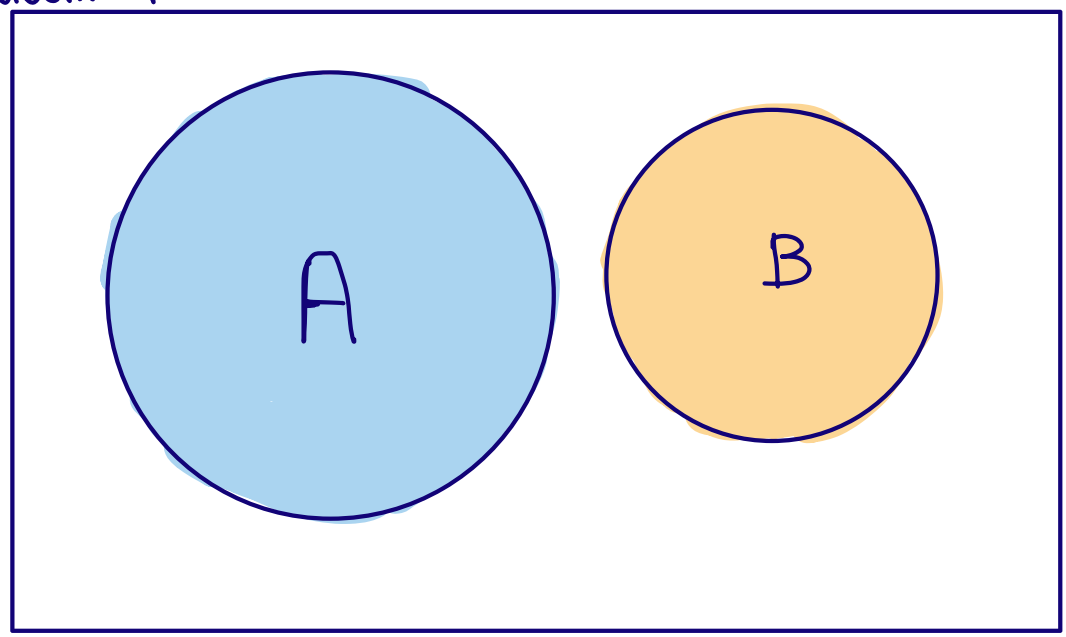
Outcome Space



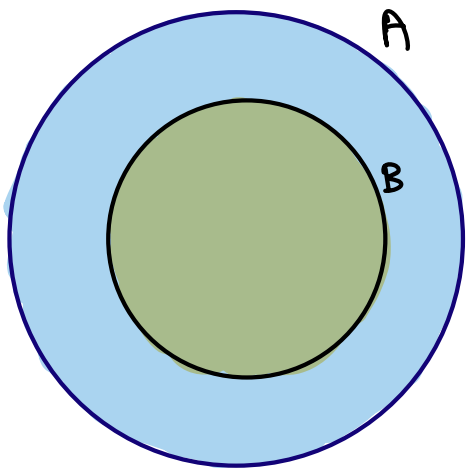
$P(A \text{ or } B) = P(A \cup B)$

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

More generally.....

$$P\left(\bigcup_{i=1}^{n} A_i\right) = \sum_{i=1}^{n} P(A_i)$$

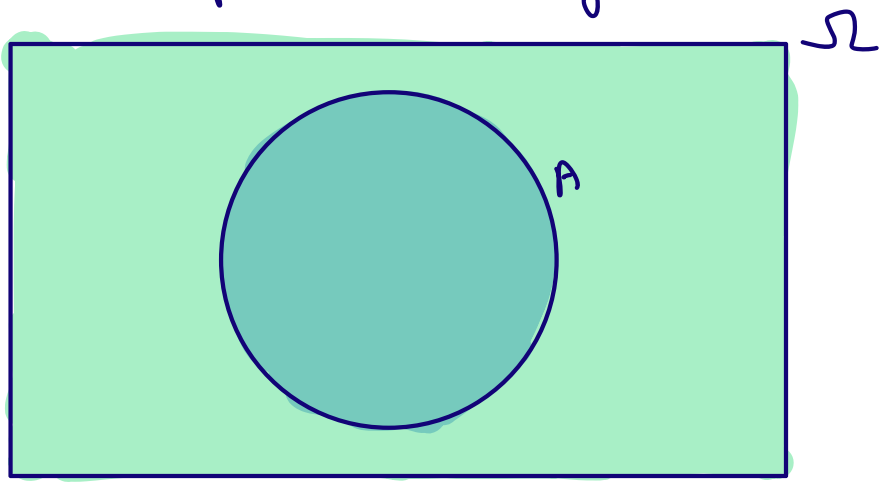
Nested Events



$P(A \text{ but not } B) = P(A \setminus B)$

$= P(A) - P(B)$

This is where the complement rule stems from:



$$P(A^c) = P(\Omega \setminus A) = P(\Omega) - P(A)$$
$$= 1 - P(A)$$