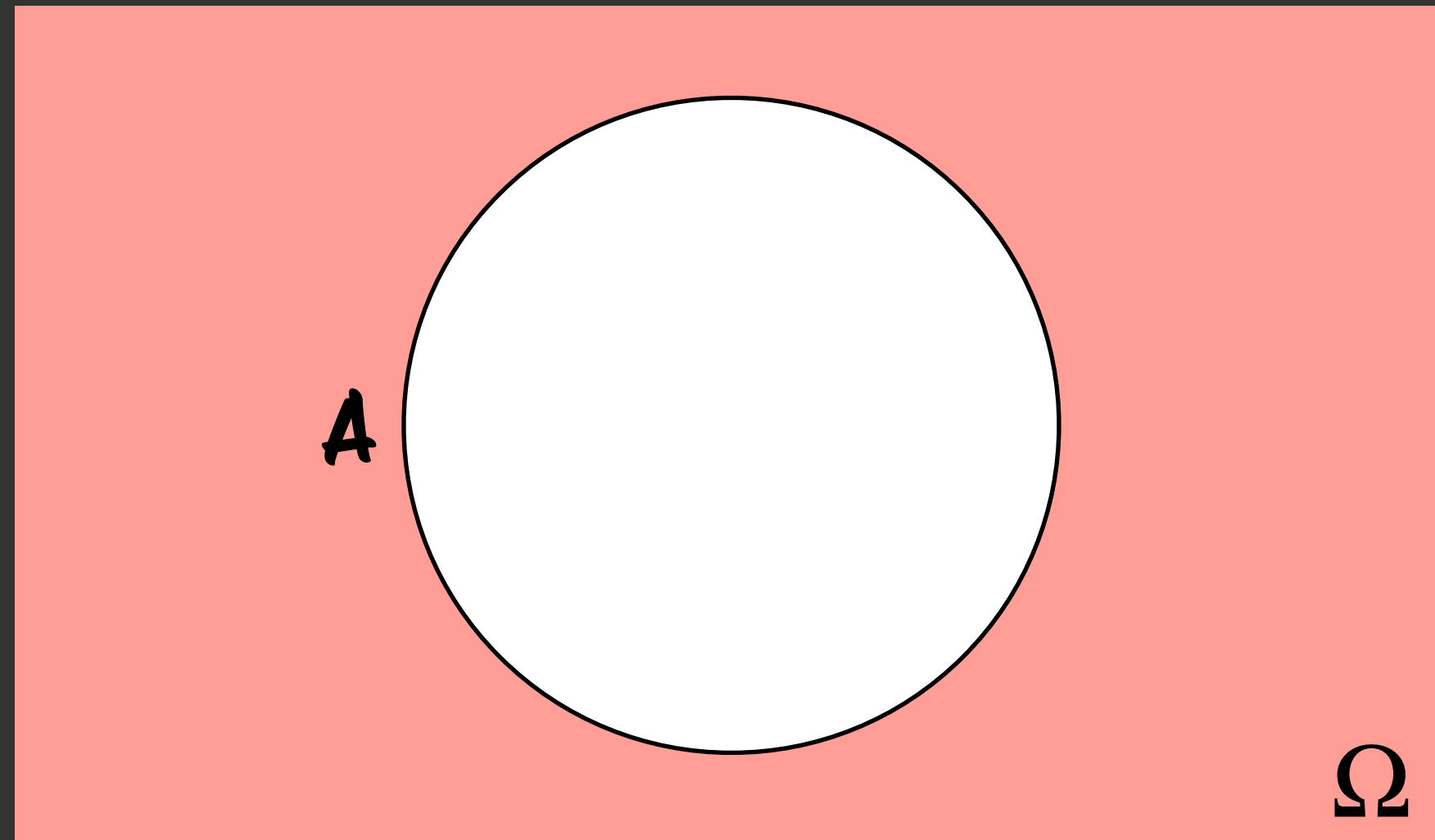


# the algebra of events

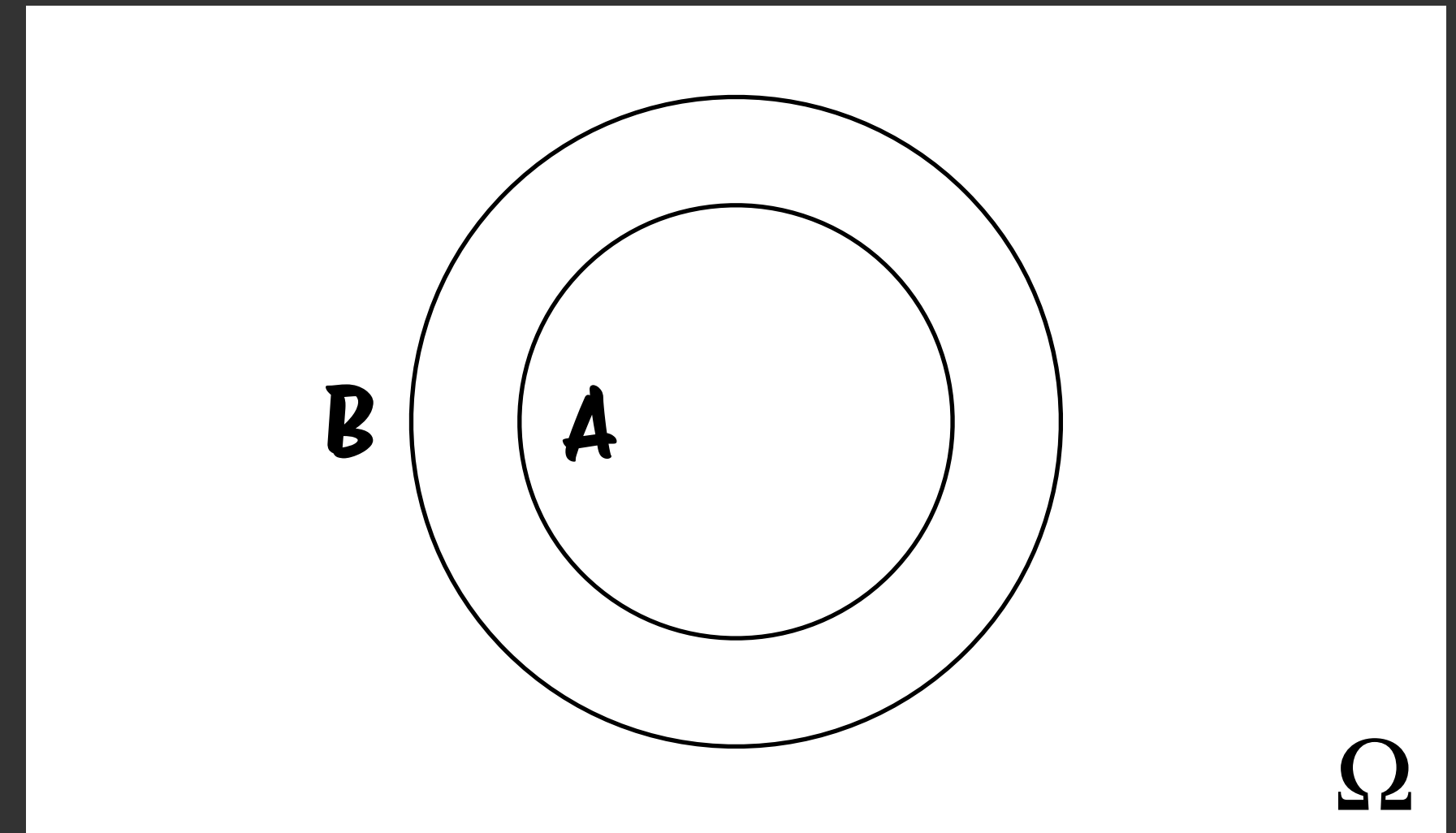
- Often we are interested in combinations of two or more events
- Events are sets (i.e. subsets of the sample space  $\Omega$ ) so we can do the usual set operations
- Assume sample space with two events  $A$  and  $B$ 
  - ▶ **complement  $\bar{A}$  (also denoted  $A^c$  or  $A'$ )**  
all elements of  $S$  that are not in  $A$
  - ▶ **subset  $A \subset B$**   
all elements of  $A$  are also elements of  $B$
  - ▶ **union  $A \cup B$**   
all elements of  $\Omega$  that are in  $A$  or  $B$
  - ▶ **intersection  $A \cap B$**   
all elements of  $\Omega$  that are in  $A$  and  $B$
- These operations can be represented graphically using **Venn diagrams**

# venn diagrams

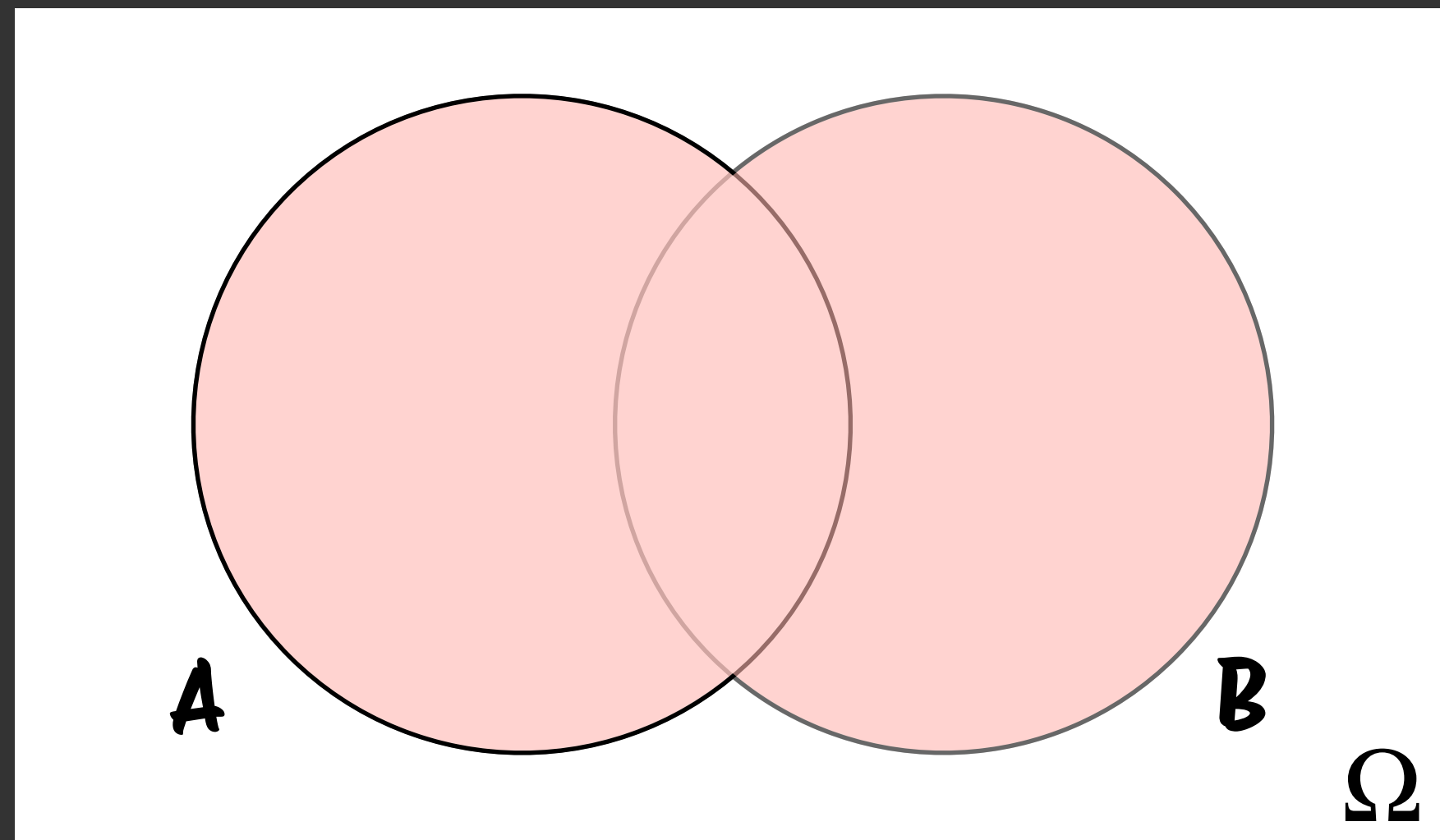
$\bar{A}$



$A \subset B$



$A \cup B$



$A \cap B$

