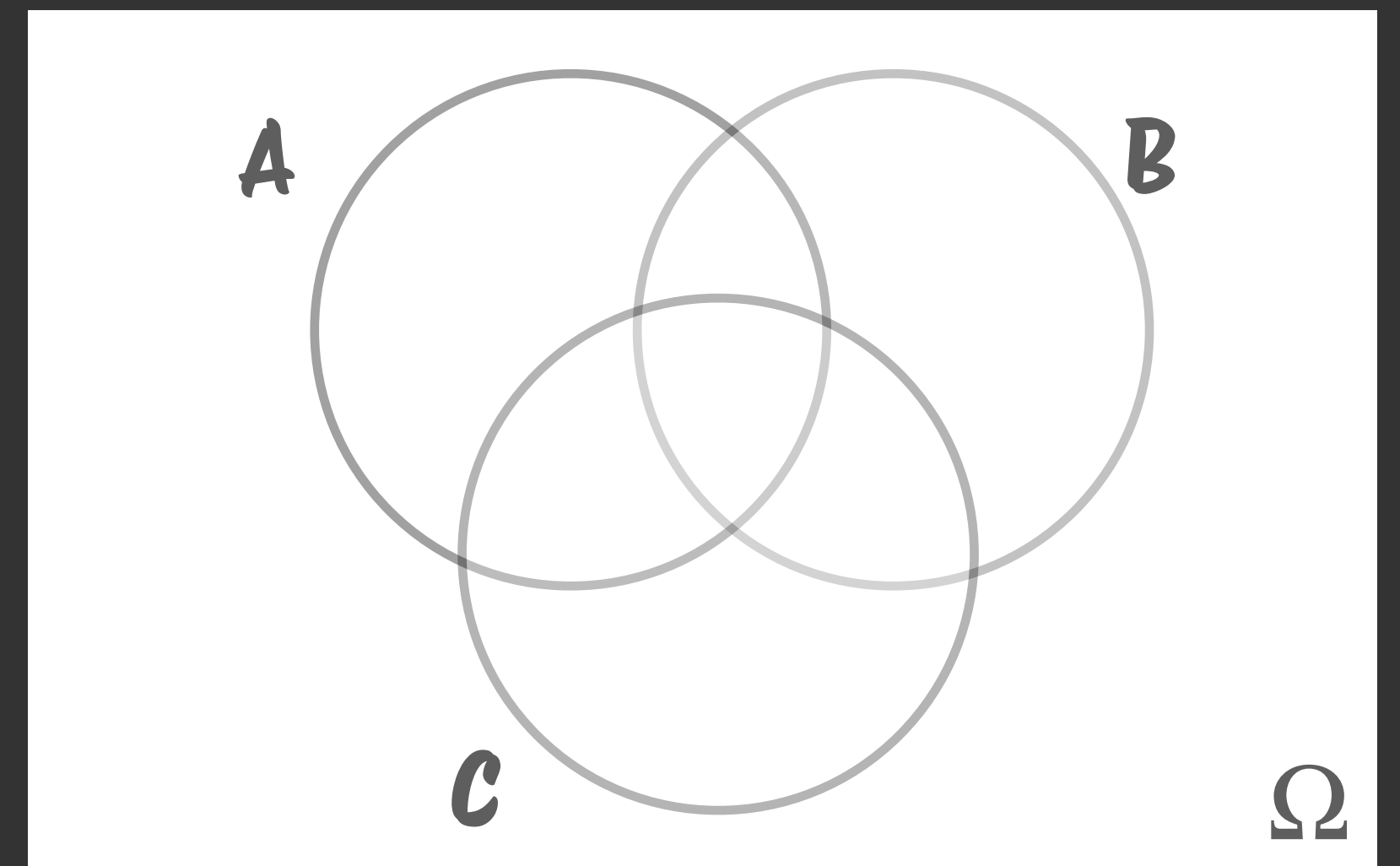# probability rules

Inclusion-Exclusion Rule

For three events A, B, C

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

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

probability rules

Conditional Probability Rule