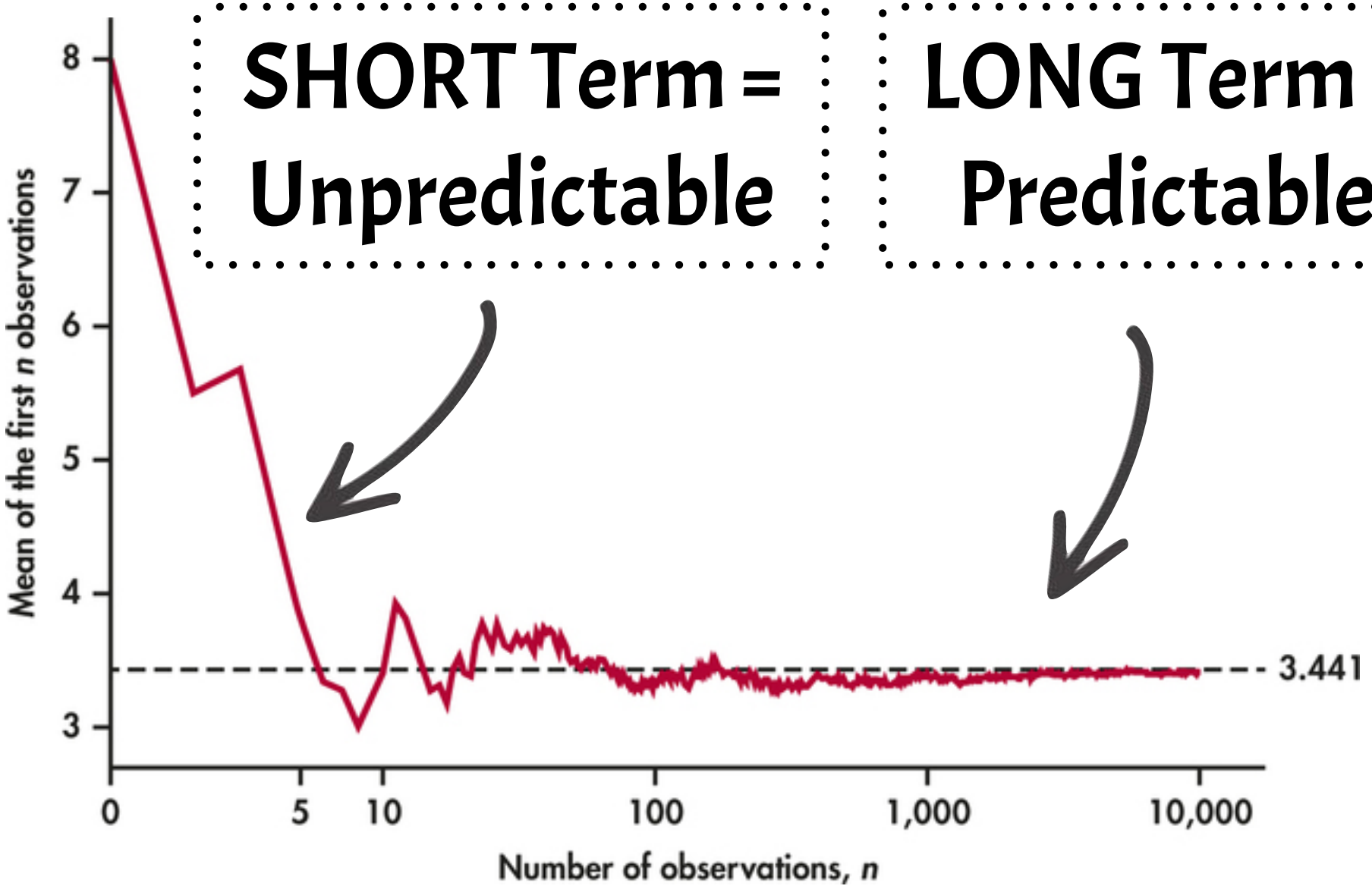
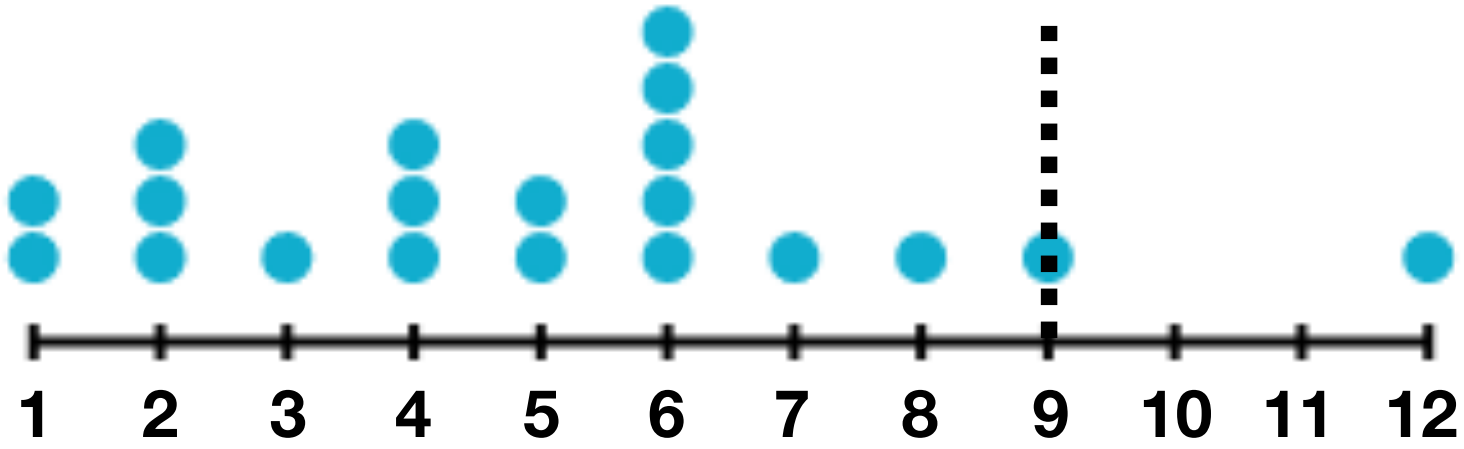
Law of Large Numbers



SIMULATION

AN IMITATION OF CHANCE BEHAVIOR

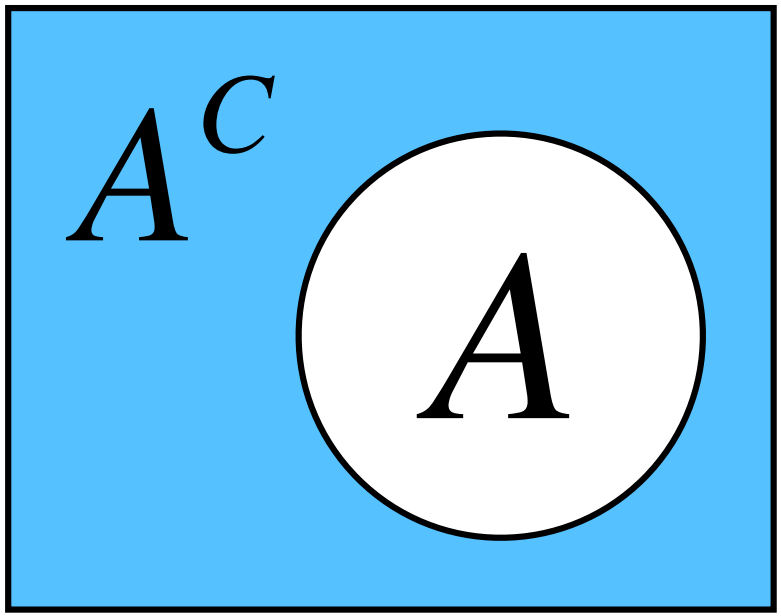
P(9 or more) = 2/20



Complement Rule

$$P\left(A^C\right) = 1 - P\left(A\right)$$

Complement of Event A =
the event of A
not happening



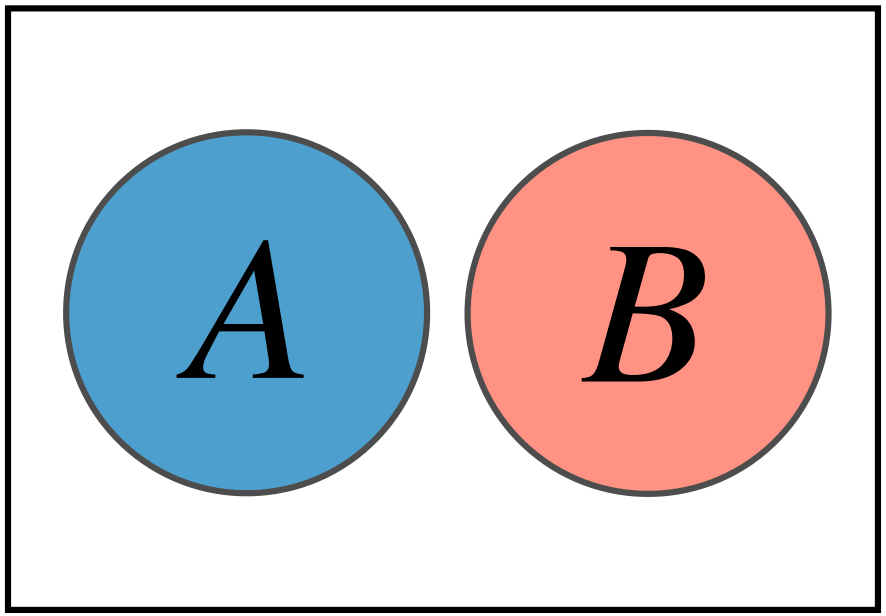
Addition Rule

for mutually exclusive events

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

Mutually Exclusive Events

Events cannot occur together



General Addition Rule

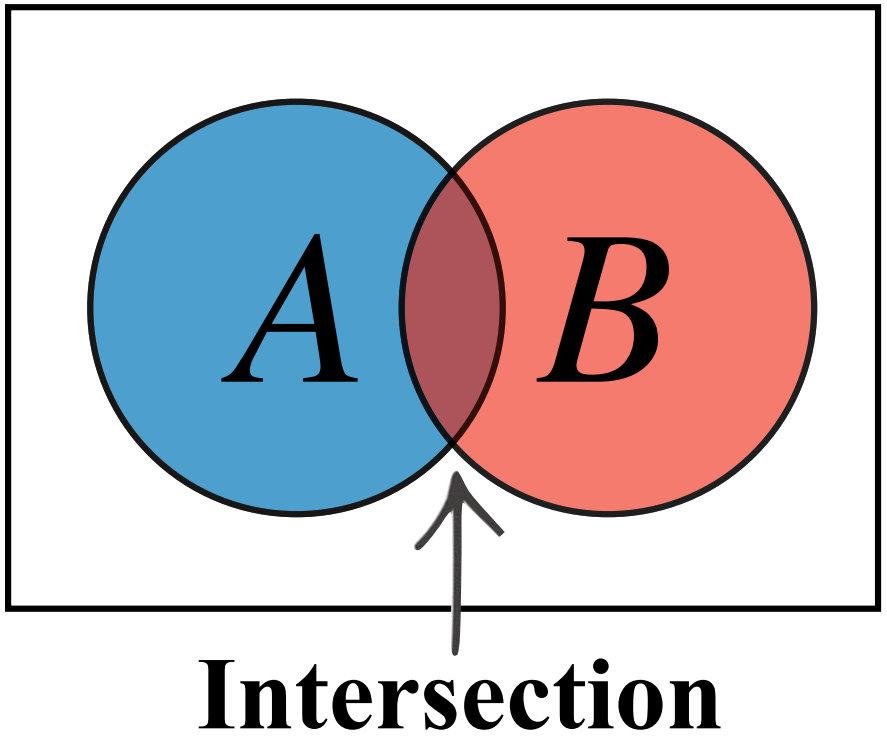
$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

UNION

$\cup$ = or

INTERSECTION

$\cap$ = and



Multiplication Rule

for independent events

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

Independent Events A & B

$$P(A \mid B) = P(A) \; ; \; P(B \mid A) = P(B)$$

General Multiplication Rule

$$P(A \cap B) = P(A) \cdot P(B \mid A)$$

(A and **B)**

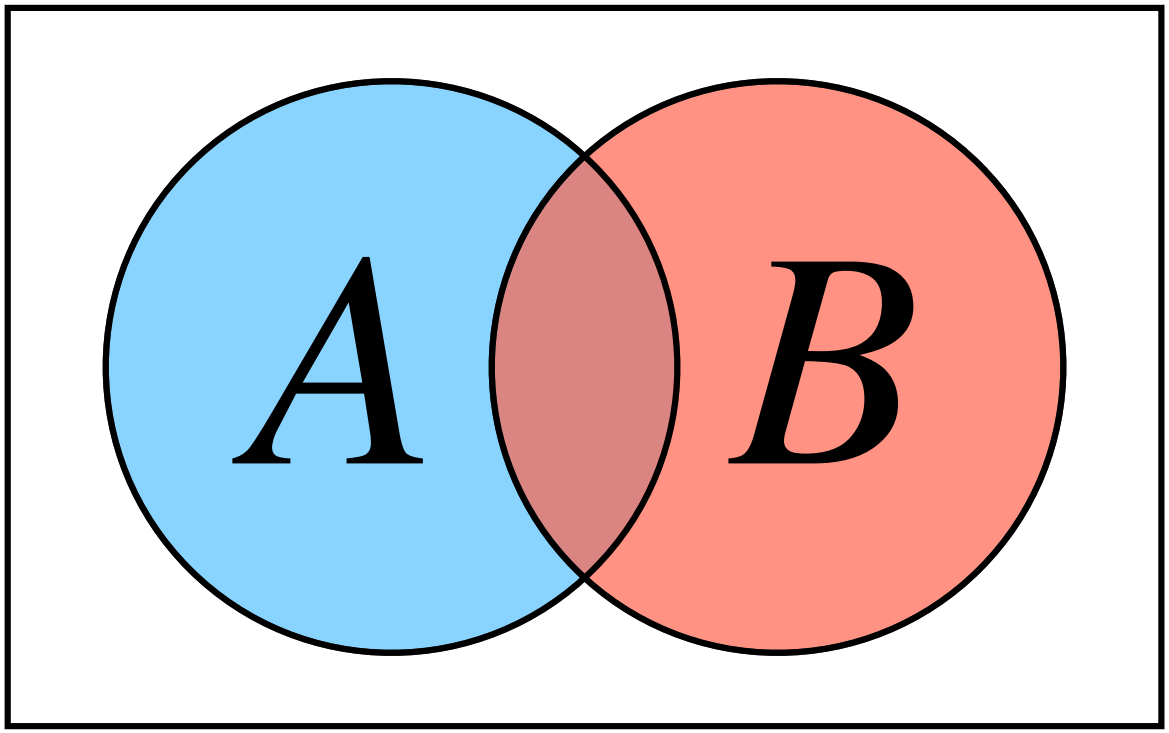
(B given **A)**

If A & B are INDEPENDENT:

$$P(B \mid A) = P(B)$$

UNION

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



Event A

OR

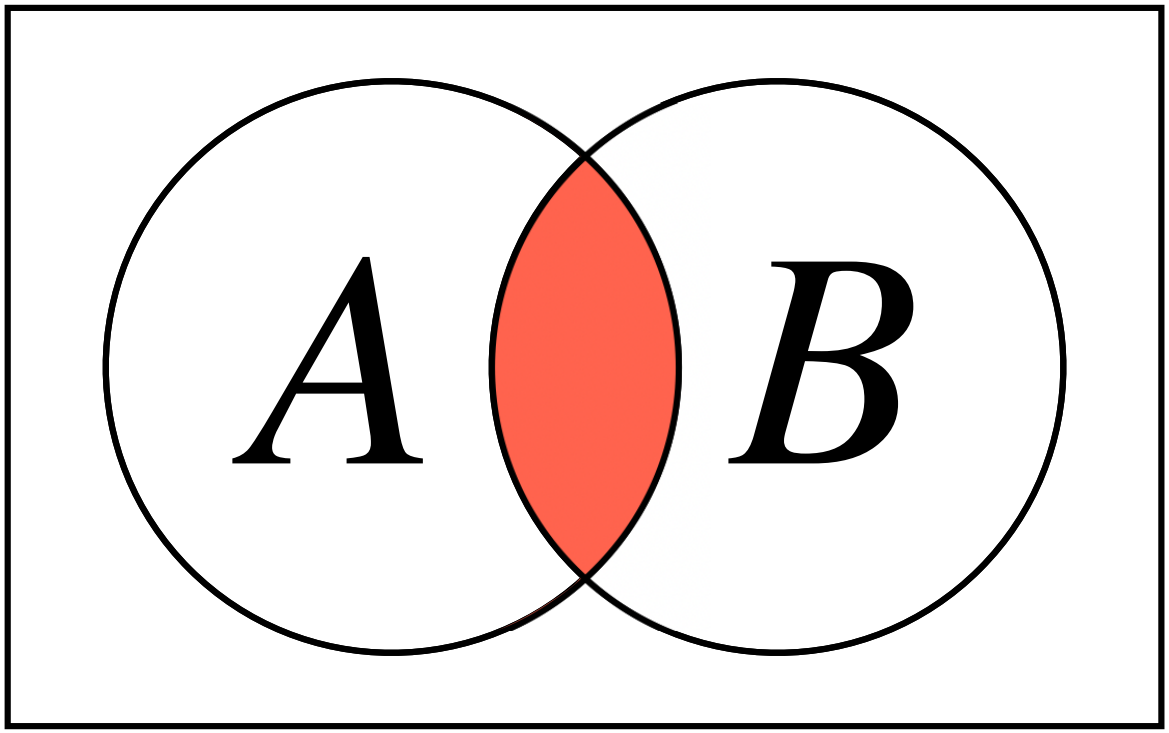
Event B

OR

Event A & B

INTERSECTION

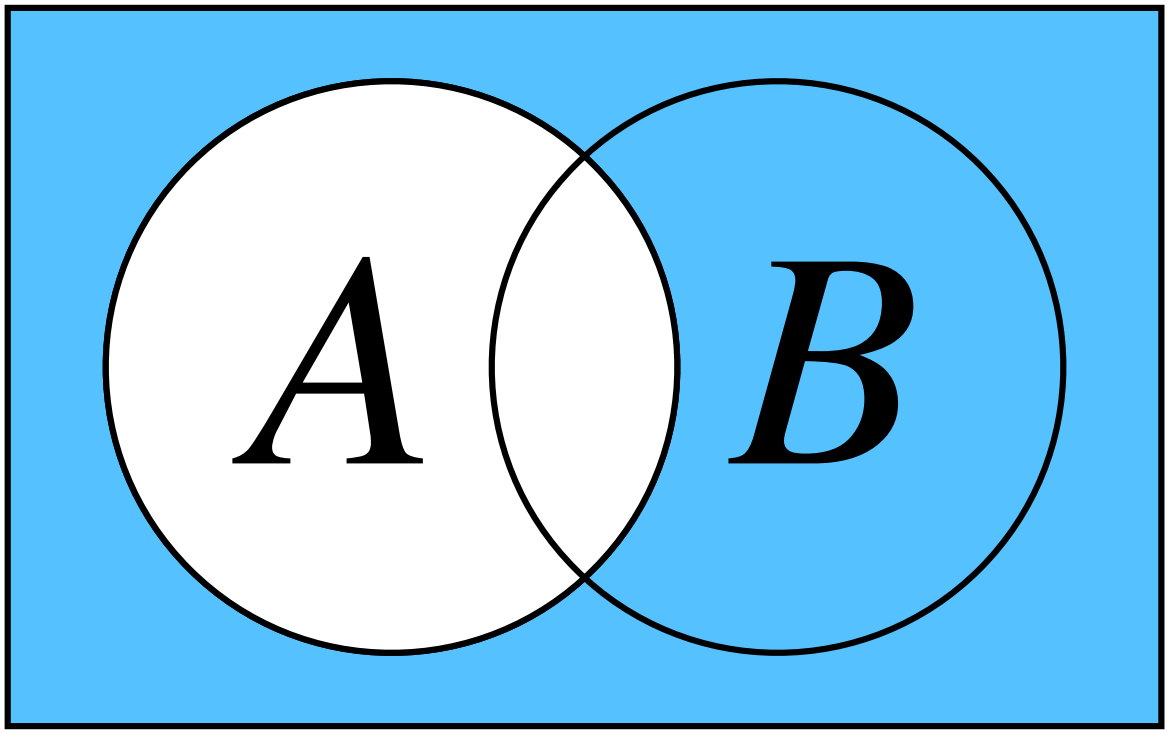
$$P(A \cap B) = P(A \text{ and } B)$$



Event A
AND
Event B

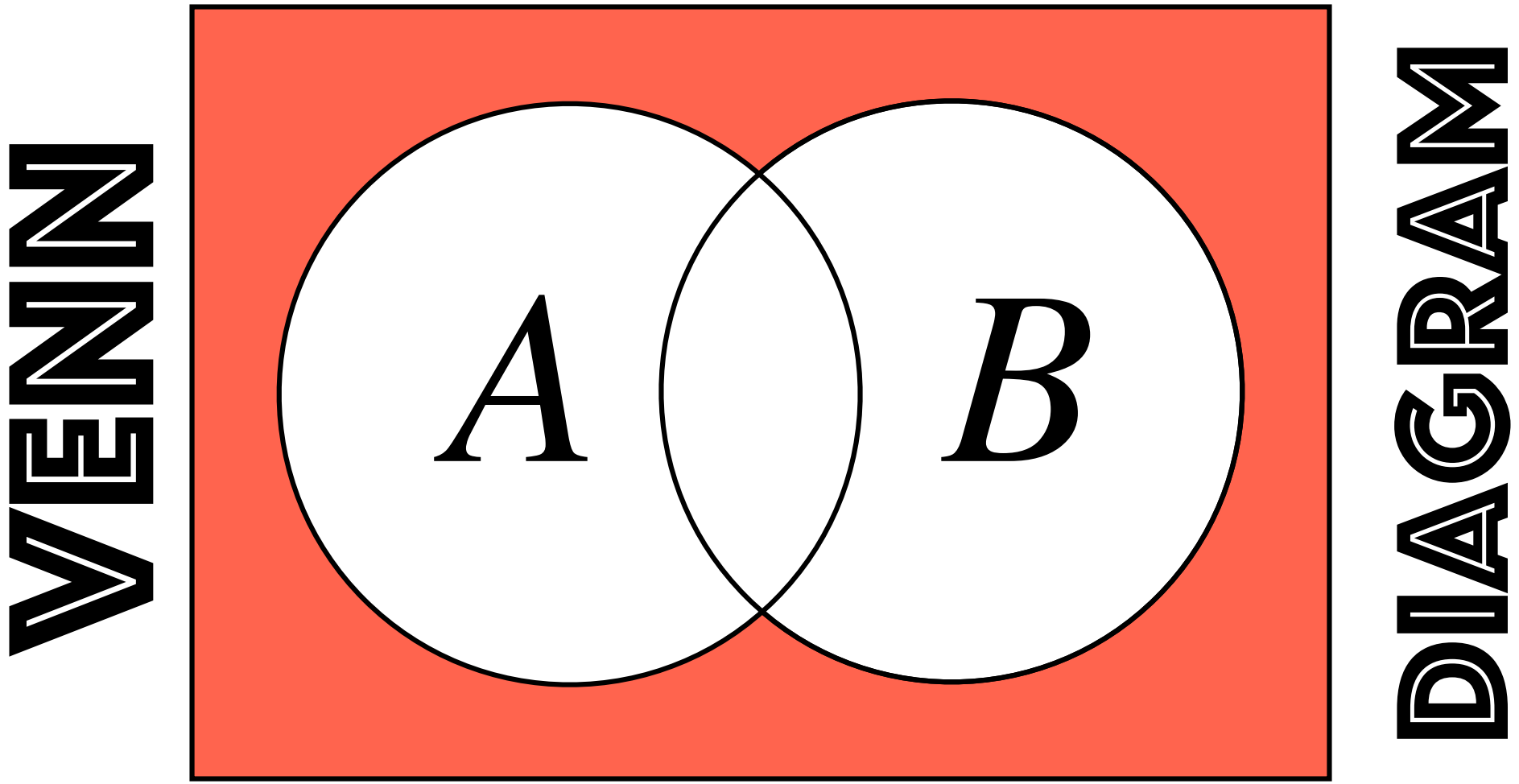
COMPLEMENT

$$P\left(A^{C}\right)=1-P\left(A\right)$$

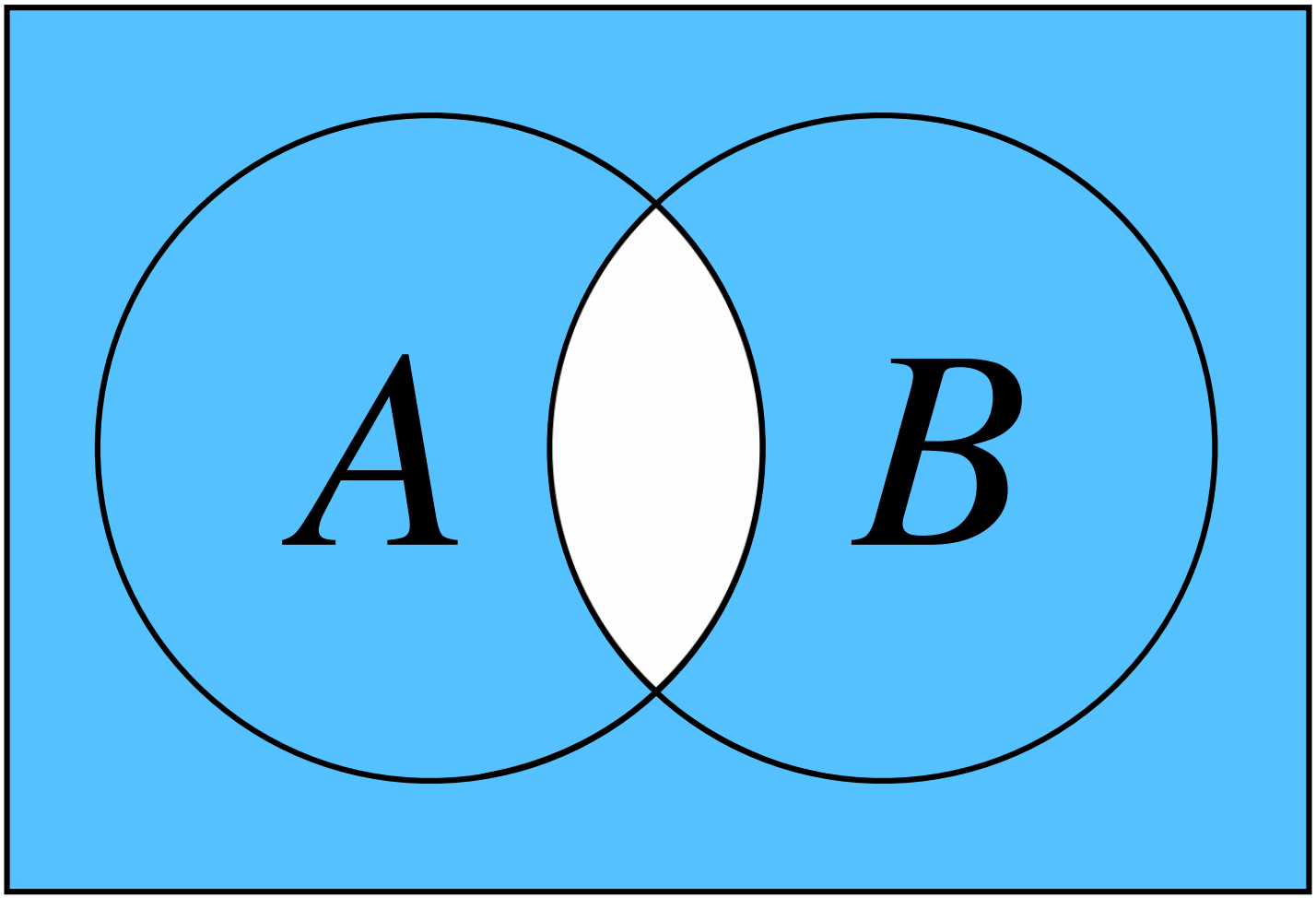


Event of
NOT
A

$$P(A \cup B)^C = P(A^C \cap B^C)$$



$$P(A \cap B)^C = P\left(A^C \cup B^C\right)$$



CONDITIONAL

PROBABILITY

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

Event A **GIVEN** Event B