

fair → hilesiz

toss → yazı-tura atmak

sets → kümeler

subsets → alt kümeler → " $A \subset B$ "

$\mathbb{Z}$ , integers  $\mathbb{N}$ , natural numbers

$\mathbb{R}$ , real numbers  $\mathbb{Q}$ , rasyonel  $\frac{a}{b}$   $b \neq 0$

Superset →  $A \supset B$ ; kapsıyor demektir

Universal set " $\Omega$ "

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Union - " $\cup$ "  $A$  or  $B$

Intersection " $\cap$ "  $A$  and  $B$

Complement  $A^c, A', \bar{A}$

Difference  $A - B$

Disjoint sets  $A \cap B = \emptyset$  (empty set)

Partition  $A_1, A_2, \dots, A_n$  are disjoint

and  $A_1 \cup A_2 \dots A_n = \Omega$

De Morgan's law  $\rightarrow (A \cap B)^c = A^c \cup B^c$   
 $\hookrightarrow (A \cup B)^c = A^c \cap B^c$

Distributive law  $\rightarrow A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$   
 $\hookrightarrow A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$

Range  $f(x)$  in alabildiği tüm değerler

$f(x)=1$  and  $f(x)=2$  olamaz

$f(1)=1$  and  $f(-1)=1$  olabilir

$f(x)$  tanımsız olamaz

Countable  $\rightarrow$  finite or enumerable

$\mathbb{N} = \{1, 2, 3, \dots\}$  infinite and countable

$\mathbb{Q} = \{0.000\dots 1, \dots\}$  infinite and countable

Power set  $\rightarrow 2^n \rightarrow$  all subsets

Exhaustive set  $\rightarrow A \cup B \cup C \dots \cup N = S$  ise

↳ kesinlikle öngörülebilir

Outcome  $\rightarrow$  Çıktı

Event  $\rightarrow$  Olay  $\subset$  Sample space

probability axioms

$$P(A) \geq 0 \quad \text{countable collection}$$

$$P(S) = 1 \quad \begin{aligned} &\hookrightarrow \text{disjoint} \\ &\hookrightarrow P(A_1) + P(A_2) = P(A_1 \cup A_2) \end{aligned}$$

$$6 \text{ rules} \rightarrow P(A) = 1 - P(A^c) \quad P(\emptyset) = 0$$

$$P(A) \leq 1 \quad P(A - B) = P(A) - P(A \cap B)$$

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

$$\text{if } A \subset B \rightarrow P(A) \leq P(B)$$

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$$\text{calculating prob} \rightarrow P(A) = \frac{|A|}{|S|}$$

$$\text{Conditional prob. } P(A|B) = \frac{P(A \cap B)}{P(B)}$$





