

Task - 21

Probability

Model Causes

Data events

العلاقة بين الاحتمال و Statistic

بيانات الاحتمال و Statistic

Flipping coins

Q1: $N=10$ ، $P(\text{Heads}) = 0.5$ ، $P(\text{Tails}) = 0.5$

fair coin $P(\text{Heads}) = 0.5$ $P(\text{Tails}) = 0.5$

Q2: $P(\text{Tails}) = 0.5$ ، $P(\text{Heads}) = 0.5$ ، $P(\text{Heads}) + P(\text{Tails}) = 1$

Q3: Loaded coin $P(\text{Heads}) = 0.75$ ، $P(\text{Tails}) = 0.25$

$$P(\text{Tails}) + P(\text{Heads}) = 1$$

$$P(A) = 1 - P(\text{not } A)$$

not A

Q4: $P(\text{Heads}) = 0.75$ ، $P(\text{Tails}) = 1 - 0.75 = 0.25$

Two Flips: Q5: {Heads, Heads} $P(H) = 0.5$ ، $P(H, H) = 0.5 \times 0.5 = 0.25$

↓
بجدول الاحتمال و Statistic

Truth Table

Flip-1 Flip-2

$$P(H, H) = P(H) \times P(H) = 0.5 \times 0.5 = 0.25$$

H	H	0.25
H	T	0.25
T	H	0.25
T	T	0.25

Q6: If $P(H) = 0.6$ ، $P(T) = 0.4$

Flip1

Flip2

Q7

H	H	$P(H, H) = 0.6 \times 0.6 = 0.36$
H	T	$P(H, T) = 0.6 \times 0.4 = 0.24$
T	H	$P(T, H) = 0.4 \times 0.6 = 0.24$
T	T	$P(T, T) = 0.4 \times 0.4 = 0.16$

$$Q8: 0.36 + 0.16 + 0.24 + 0.24 = 1$$

