whats the difference between Probablity & Statistics?

In Probablity you predict data

In Statistics you use data to predict

* Probablity:-

Theortial $\leftarrow P(A) = \dfrac{\underline{Preferred\ Outcome}}{All\ Possible\ Out\ Come} \rightarrow \begin{array}{l} Event \\ \rightarrow Sample\ space \end{array}$

$P(Sample\ Space) = 1$

→ IF I don't know all outcome ??

أحرب

┌ Trial ⟹ record outcome
└ Experment ⟹ Trials

expected value* $E(A) = P(A) * n \rightarrow$ عدد مرات أجربة اللي علشانها

$\dfrac{1}{2} * 10 = 5 \rightarrow$ Coin # Flip لوعات عشر مرات

└ Experment Probablity ⟹ (Approximated) اتوقع ان يطلعلي العشر مرات
كم مرات طلعت صورة لا

* $P(H') = 1 - P(H)$

* $P(H,H) = P(H) * P(H)$

$P(3\ Heads):-$ → How Many Possibility getting 3 head

- we can write all sample space (2^3) and count Heads
⟹ Other technique !!

P (3 Heads) !- → How Many Possibility getting 3
- we can write all sample space (2^3) and Count He
→ Other technique !!

1- How Many ways can we put 3 Heads in 5 Flips

$$H_A \quad H_B \quad H_C$$

different way
to
arrang

HA

e Possibility A Can $\Leftarrow 5 \quad * \quad 4 \quad * \quad 3 \quad = \quad 60$

be

Can be
in other 4.

3 spaces
Left

which 32

Number of Possibilities of getting 3 Head

$$= \frac{5 \times 4 \times 3}{3 \times 2 \times 1} = 10$$

→ Number of ways that I can
rearange 3 things.