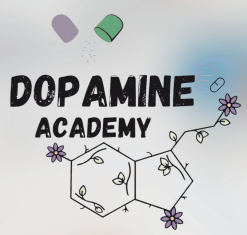


Statistics

Subject: Lecture 8



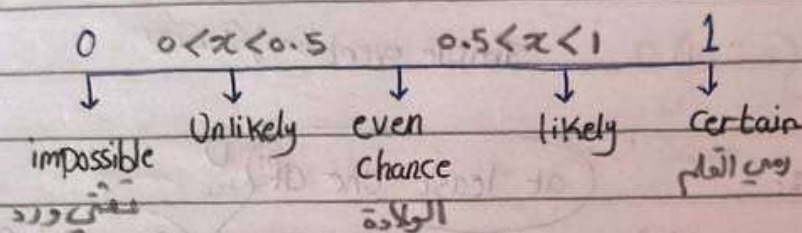
► Subject :

If $Q_2 - Q_1 = Q_3 - Q_2$ then the shape is bell-shaped

If $Q_2 - Q_1 > Q_3 - Q_2$ then the shape is left skewed (-)

If $Q_2 - Q_1 < Q_3 - Q_2$ then the shape is right skewed (+)

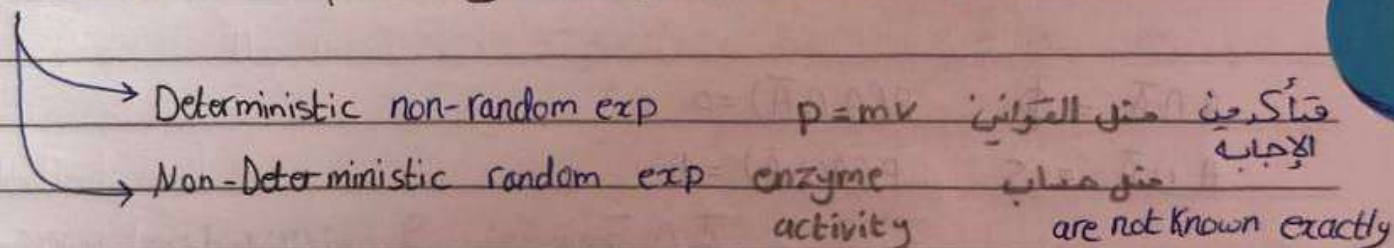
Probability



Provides:-

1. a quantitative description of chances associated with various outcome
2. a bridge between descriptive and inferential statistics.

Experiment :- is the process by which an Observation is obtained.



- The sample space (S or Ω) for a random experiment is the set of all possible outcomes.

may contain:

1. A Finite number of outcomes محدود
2. A countably infinite number of outcomes تعداداً نامتناهی $-\infty \rightarrow \infty$
3. An uncountably infinite number of outcomes اعداداً نامتناهی

Subject :

Sample space يعني جرد واحد من
أدنى جرد نود وطلع رقم 2 ؟

من احتمال لما أرمي نود وطلع رقم أكبر من 7 ؟

Types of Events :

event هو جرد من sample space

1. Null (impossible) event (Φ)

3. Simple event

2. Entire (Sure) event (S)

4. compound event

من احتمال لما أرمي نود
طلع رقم أقل من 7 ؟

احتمال ارمي جرد نود وطلع العدد غروي ؟

يعني أكثر من simple event

Event Relations :

at least one of $\cup$

1. Union of two events ($\cup$)

OR BOTH $\cap$

2. Intersection of two events ($\cap$)

And

3. Complement of an event ($\bar{A}$)

not

4. Mutually exclusive $P(A \cap B) = 0$

male female

$$A \cap \bar{A} = \Phi \quad P(A \cap \bar{A}) = 0$$

$$A \cup \bar{A} = S \quad P(A \cup \bar{A}) = 1$$

$$\overline{A \cup B} = \bar{A} \cap \bar{B}$$

ex:- 1. The event A or B does not occur if the event A does not occur and the event B does not occur.

$$P(A) + P(A') = 1$$

Subject :

Types of probability

اعتمادى على
الاحتمال واللاحظان
المسجلة

Objective

حسب الخبرة يعني
تجربتي من شخصه لآخر
Judgment

Subjective

Relative Frequency

$$\sum RF = 1$$

$$P = \frac{n}{\text{total}}$$

Equally likely

$$P = \frac{1}{n}$$

كل Outcome نفس الprobability

ex: roll a fair die

رعي الرول

$P(0-1)$

never occur

always occur

ex: predictions for rain

note :-

$$P(A \cap B) = 0$$

← mutually exclusive اذا كان الحدث

مثال : احتمال يكون الشخص في المدينة وليس في البيت

مثال : احتمال اربع نرد ويطلع الرقم ٣ والرقم ٦ بنفس الوقت

• Calculating probabilities for Intersection

depends on the idea of : independent and dependent events.

Conditional Probabilities : the probability that A occurs, given that event B has occurred

← المقصود هو حساب $P(A)$ بعد حدوث B