

Module: Probabilities-Statistics

Directed Work Series n°4

(Introduction to probabilities)

Exercice n°1 :

A, B and $A \cup B$ are three events with probabilities 0.4, 0.5 and 0.6.

Calculate the probability of the events :

$\bar{A}$, $\bar{B}$, $A \cap B$, $\bar{A} \cap B$, $A \cap \bar{B}$, $\bar{A} \cap \bar{B}$, $\bar{A} \cup B$, $A \cup \bar{B}$.

Exercice n°2 :

A box contains 15 light bulbs, which 5 are defective. We take out 6 bulbs at random. Find the probability in

- a) No bulb is defective;
- b) One bulb is defective;
- c) Two bulbs are defective.
- d) all 3 bulbs are defective;
- e) At least one bulb is defective.
- f) At least two bulbs are defective.

***Exercice n°3 :** An urn contains 12 balls: 3 red, 4 blue and 5 yellow. 3 balls are drawn simultaneously. Calculate the probability of the following events:

- a) $A = \text{"all three balls are red"}$;
- b) $B = \text{"one ball of each colour is drawn"}$;
- c) $C = \text{"none of the three balls is red"}$;
- d) $D = \text{"at least one of the three balls is red"}$;
- e) $E = \text{"at least one of the three balls is blue"}$;
- f) $F = \text{"at most one of the three balls is blue"}$;

Exercice n°4 : A survey gives the following information: 35 % of people go to cinema C, 12 % to museum M and 6 % to both. Express the percentage of people:

- a) going to the cinema or museum.
- b) not going to the cinema.
- c) going neither to the cinema nor to the museum.
- d) going to the cinema but not to the museum.

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