

Exercise 1

A random experiment leads to the observation of three events A, B and C. It is known that :
 $P(A) = 0.15$, $P(B) = 0.3$, $P(C) = 0.4$, $P(A \cup B) = 0.42$, $P(A \cap C) = 0.05$ B and C are mutually exclusive.

Calculate the probability of the following events :

- 1 $P(\bar{A}) =$
- 2 $P(B \cup C) =$
- 3 $P(A \cap B) =$
- 4 $P(A \cap \bar{C}) =$
- 5 $P(\bar{A} \cap \bar{B}) =$

Exercise 2

A chemical analysis laboratory receives a batch of test tubes. These tubes are supplied by three different companies A, B and C in the following proportions: 50% , 30% and 20%. 2% of the tubes manufactured by A, 3% of those manufactured by B and 4% of those manufactured by C present defects. A test tube is chosen at random from the received batch.

- 1 What is the probability that it is defective?
- 2 Given that the chosen tube is defective, what is the probability that it comes from company A?

Exercise 3

A researcher performs an experiment in which he attempts to germinate seeds of a plant species. The probability that a seed germinates when planted is 0.8.

- 1 If the researcher plants 10 seeds, what is the probability that at least 8 of them germinate?

Exercise 4

The weights of newborns approximately follow a normal distribution with a mean of 3.4 kg and a standard deviation of 0.5 kg. Calculate the probability that a newborn weighs less than 3 kg.

Exercise 5(Supplementary)

The concentration of a chemical substance in a biological sample follows a normal distribution with a mean of 25 mg/L and a standard deviation of 5 mg/L.

A researcher wishes to determine the probability that a randomly chosen concentration is greater

than 30 mg/L.