What is the probability of neither event A nor event B occurring?

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June 26, 2024

The probability of neither event A nor event B occurring refers to the likelihood that both events A and B will not happen in a given situation. This can be calculated by subtracting the individual probabilities of event A and event B from the total probability of all possible outcomes. In other words, it is the probability of the complement of events A and B. This can be useful in determining the likelihood of a specific outcome when there are multiple events that could potentially occur.

Find the Probability of Neither A Nor B

Given two events, A and B, to "find the probability of neither A nor B" means to find the probability that neither event A nor event B occurs.

We use the following formula to calculate this probability:

P(Neither A Nor B) = 1 - (P(A) + P(B) - P(A∩B))

where:

P(A): The probability that event A occurs.P(B): The probability that event B occurs.P(A∩B): The probability that event A and event B both occur.

The following examples show how to use this formula in practice.

Example 1: Probability of Neither A Nor B (Basketball Players)

Suppose the probability that a given college basketball

player gets drafted into the NBA is 0.03.

Also suppose the probability that a given college basketball player has a 4.0 GPA is 0.25.

Also suppose the probability that a given college basketball player has a 4.0 GPA *and* gets drafted into the NBA is 0.005.

If we randomly select some college basketball player, what is the probability that they neither get drafted nor have a 4.0 GPA?

Solution:

P(drafted) = 0.03P(4.0 GPA) = 0.25P(drafted ∩ 4.0 GPA) = 0.005

Thus, we can calculate:

P(Neither drafted Nor 4.0 GPA) = 1 - (P(drafted) + P(4.0 GPA) - P(drafted ∩ 4.0 GPA))P(Neither drafted Nor 4.0 GPA) = 1 -(.03 + .25 - .005)P(Neither drafted Nor 4.0 GPA) = 0.715

If we randomly select some college basketball player,

the probability that they neither get drafted nor have a 4.0 GPA is 0.715 or 71.5%.

Example 2: Probability of Neither A Nor B (Exam Scores)

Also suppose the probability that a given student used a new studying method is 0.35.

Also suppose the probability that a given student received a perfect score *and* used a new studying method is 0.04.

If we randomly select some student, what is the probability that they neither received a perfect score nor used a new studying method?

Solution:

P(perfect score) = 0.13P(new method) = 0.35P(perfect score ∩ new method) = 0.04

Thus, we can calculate:

P(Neither perfect score Nor new method) = 1 - (P(perfect score) + P(new method) - P(perfect score ∩ new method))P(Neither perfect score Nor new method) = 1 - (0.13 + 0.35 - 0.04)P(Neither perfect score Nor new

method) = 0.56

If we randomly select some student, the probability that they neither received a perfect score nor used a new studying method is 0.56 or 56%.

The following tutorials explain how to perform other calculations related to probabilities: