

[Escreva aqui]



## Example 2 (Complementary events, reunion, intersection)

Consider A and B, two events from a sample space S.

Knowing that  $P(A) = 0.5$ ,  $P(\bar{A} \cap \bar{B}) = 0.1$  and  $P(A \cap B) = P(B \cap \bar{A})$ , calculate  $P(B)$ .

**Answer:**

If  $P(\bar{A} \cap \bar{B}) = 0.1$ , then  $P(A \cup B) = 1 - P(\bar{A} \cap \bar{B}) = 1 - 0.1 = 0.9$

For any two events A and B,  $P(A \cup B) = P(A) + P(B) - P(A \cap B)$

This means that  $P(B) - P(A \cap B) = 0.4$

As  $P(B) - P(A \cap B) = P(B \cap \bar{A})$ , then  $P(B \cap \bar{A}) = 0.4$

Hence,  $P(A \cap B) = 0.4$  and  $P(B) = 0.8$